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PROCEEDINGS

PLANNING FOR SUSTAINABLE DEVELOPMENT

A RESOURCE BOOK

SCHOOL OF COMMUNITY AND REGIONAL PLANNING
THE UNIVERSITY OF BRITISH COLUMBIA
NOVEMBER 25-27, 1988

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Planning for Sustainable Development:

A Resource Book

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William Rees

May 1989

FOREWORD

The symposium, *Planning for Sustainable Development*, grew out of a series of courses taught in 1987 and 1988 by UBC Planning Professor William Rees. As the students became more cognizant of the global ecological ramifications of conventional development, we simultaneously became more aware of our responsibility as planners to seek more sustainable forms of development. With the publication in 1987 of the UN World Commission on Environment and Development report, *Our Common Future*, and the public interest it generated, we were further encouraged that sustainable development belongs at the top of the political agenda.

The purpose of the symposium was to explore how sustainable development applies to specific planning and policy decisions at the provincial and municipal levels, particularly in British Columbia. Rather than engaging people in unfocussed debate, the symposium was intended to be a call to action. Participants were asked to consider what kinds of changes in economic development, resource management, and social policies would be required with a serious commitment to sustainable development. How would planning and management practice be different under sustainable development?

The symposium was designed to provide a forum for discussion among people who rarely have an opportunity to meet together: politicians; representatives from public interest groups; bureaucrats; and corporate executives. Prior to attending the symposium, participants were provided with sets of background papers, prepared by the students and Dr. Rees, to provide an overview and common basis for discussion (an order form for the background papers is included in the appendices). The symposium opened on Friday night, November 25th, with a keynote address by the Honorable Stephen Lewis, former Canadian Ambassador to the United Nations. In his speech to the overflow crowd, Mr. Lewis emphasized the urgency with which the world must deal with poverty and military expenditures, the symptoms of unsustainable development. The next day participants attended ten concurrent workshops, focussing on the policy implications of sustainable development in various sectors. The workshops began with informal presentations (not summarized in these proceedings) by government ministers or senior decision-makers, who outlined their concerns and hopes for sustainable development within their area of attention. The remainder of each workshop was spent discussing the issues and implications of sustainable development and debating recommendations on the particular subject or sector of concern. That evening, the organizers compiled a Symposium Statement, incorporating recommendations from the workshops. At the Sunday morning plenary, each participant received a copy of the Statement, and a rapporteur from each workshop group presented the recommendations from that workshop. Participants had an opportunity to question or respond to these presentations. The session concluded with general agreement among participants on the Symposium Statement.

STEPHEN LEWIS
SYMPOSIUM KEYNOTE ADDRESS
NOVEMBER 25, 1988
SUMMARY

I am especially gratified to be here tonight because the quest for a definition for sustainable development, or more importantly, the quest for the *implications* of sustainable development, seems to me to be one of the matters worth pursuit everywhere in the world simultaneously, because in a very real sense the issue speaks to human survival.

Let me start this way. I was in the General Assembly of the United Nations on October 5th, 1987 when Madam Brundtland, the Prime Minister of Norway, took the podium and effectively disgorged a blueprint for environmental preservation and sustainable development for the next generation. And it was, at least conceptually and intellectually, the most vivid moment of the entire four years that I was privileged enough to be at the United Nations. I had the sense — it was almost palpable — that what we were hearing in the Assembly was a recitation of the greatest anxieties of humankind at the moment, and an agenda for the next quarter century.

It took the Assembly by storm. I cannot tell you how vivid was the response. I don't know whether you've read the World Commission document on Environment and Development. If you haven't, I suggest that it is worth reading. It has now been put out by Oxford University Press and is called *Our Common Future.* It is a remarkable piece of work. And it had a remarkable response, partly because Madam Gro Harlem Brundtland, in the prosecution of environmental issues, had not simply chaired a commission for 3 years — she had tramped around the world on behalf of her document; indeed she continued to do so after it was tabled. She moved to every major region, every major country; she engaged the involvement of significant politicians and bureaucrats, scientists and academics, and the community as a whole. And as a result, there was an astonishing consequence of this document: *governments took it seriously*. That very rarely happens internationally.

The document gave in its opening chapter the kind of litany with which we are now generally familiar, that if the present rate of land degradation in the world continues, then by the year 2000 we will have lost one fifth of all the arable land on the face of the earth. Each year 6 million hectares of land are degraded to desert-like conditions; over 30 years we have lost the equivalent of a country the size of Saudi Arabia. In the developing world generally, the water that is available is so polluted by sewage and industrial waste that it is a ubiquitous menace to health. In India, 70% of the surface water is polluted. Eleven million hectares of tropical forest are destroyed every year. That's the equivalent of a country the size of Austria; if you multiply that by 30 years as I did in the earlier equation, you get a country the size of India. Every single day that we inhabit this earth, we lose another animal or plant species, most of which are unchronicled. They are *lost before we even discover their existence*, which seems to be a particularly savage commentary on the nature of humankind.

So what Gro Harlem Brundtland did was to enunciate with exquisite simplicity a premise, a precept: development that meets the needs of the present without compromising the ability of future generations to meet their own needs. This is the simplest definition of sustainable development. You never again engage in major projects of economic growth without carefully assessing the consequences in environmental terms, for this generation, and future generations.

What happened in the General Assembly that day was that Madam Brundtland was followed by a number of speakers who normally only come once to the General Assembly during the year to make an overall cosmic presentation — they don't come merely to speak to one issue. She was followed by Ghandi, Mugabe, then the King of Denmark speaking on behalf of the European Economic Community, then by the Head of State of the Maldives (when most of us heard for the first time that the inexorable consequence of climatic change could mean that his whole country, a string of little islands, could well disappear beneath the seas if the warming trend continues); and one after another, we heard from environment ministers from all over the world.

And one after another they addressed the issue with very considerable urgency. Now, to bring this issue to life, the person who was key to the discussion was Robert Mugabe, because not only was he speaking then as Prime Minister of Zimbabwe, he was also speaking as the Head of the Non-Aligned Movement. In other words, his was the authentic voice of the *developing world* responding to a blueprint which was meant to cover the *entire world*. And what Mugabe had to say that day really joins the issue. He said that the developing world was not going to be seduced by rhetorical blandishments about the environment; that there are very serious questions at root here. He raised three significant caveats after saying initially, and I think with enormous sincerity, that he welcomed the document and what it contained. He went on to make the following points:

1. If this whole emphasis on the environment was merely another example of western fetishism, then the developing world was not going to participate. If this was for us another vehicle to resuscitate all of the issues which preoccupy western society — acid rain, sewage disposal, the storage of nuclear wastes — if this was the kind of theme and refrain which was to be repeated, then the developing world was suspicious.

2. If these matters of the environment were going to impose yet further conditions on the developing world, they were not going to be a part of it. You have to understand that all over the developing world at the moment, particularly in vulnerable continents like Africa and to a lesser extent Latin America and Asia, in order to receive large advances of moneys to pursue economic programs, there are significant conditions imposed by the World Bank and the International Monetary Fund; conditions imposed on the way in

which the money is to be used in programs of economic recovery. And what Mugabe was saying to the World Bank and the International Monetary Fund and the donor countries and the rest of the world was this: if you are now going to use this blueprint for environmental protection as yet another condition to impose upon us, in return for which you will condescend to loan us money, we are not going to be a part of it.

3. Mugabe's last point put very simply to the General Assembly, which is most germane, indeed most visceral, was that *when you talk to the third world about environment, you are talking to the Third World about poverty*. And unless you are prepared to deal with poverty, there will not be an environment to preserve. An enormously simple and an enormously powerful statement. And it is worth noting that the question of poverty and needs was writ large in Brundtland right away. She pointed out that it is the essential needs of the *world's poor* to which overriding priority should be given. So if you define sustainable development as meeting the needs of this generation in a way that will permit you to meet the needs of future generations, and if you define the word "needs" as essentially applicable to the world's poor, then you have the equation which is at the heart of Brundtland.

What Mugabe was saying to the world was pretty simple: if you are prepared to help us eliminate our poverty so that we are able to respond to protection of the environment, then we have common objectives. And if you are not, then this report and the concept of sustainable development *will not itself be sustained*.

The issues join — it's absolutely inescapable. And it can be put very vividly and simply. In 1979, 40 billion dollars more went into the developing world from the West than we took out by way of debt and debt-servicing obligations. In 1987, eight years later, 30 billion dollars more *went out* of the developing world, into the coffers of the richest countries and international financial institutions imaginable, over and above what they had received from us. And there is about that an abiding obscenity that is absolutely unbridgeable. You take 30 billion dollars more out of the poorest countries of the world than you put in, and you expect them to provide for you sustainable development, accepting the phenomenon that the world is so interlinked. You've got to reverse that transfer of resources *or they are finished*. There is no way of protecting the environment unless the resource transfer shifts from those who *have* to those who *have not* instead of the indecency of the other way around.

Take a look, if you will, at Robert Mugabe's own region: sub-Saharan Africa. In the most recent document published by *Earthscan* there was a phrase which describes what has happened to the African continent (a continent which will have a billion people early in the 21st century): it is a continent "set in environmental bankruptcy." And it is interesting to note that the Canadian International Development Agency has adopted the phrase "environmental bankruptcy" to describe Africa in its own environmental documents.

Land as a resource in Africa is everywhere in peril. The forests are being denuded as people of the land seek desperately for some chunk of land on which to do subsistence farming, and as people seek wood for fuel. In Africa, 80% of the people rely on wood for fuel. The constant removal of the forest cover blocks the cycling of soil nutrients; the constant grazing of grasslands undermines the soil further and causes constant soil erosion. The combination of increasing population pressures and the desperate need for land and wood is ultimately devastating.

There is of course good agricultural land, but it is in the service of cash crops. Africa attempts to export these crops in order to have some income with which to pay the debt on the loans they took *in order to have the crops*! This is economics Adam Smith style; this is quintessential Reaganism.

But in fact, that is the extraordinary dilemma of this continent. The poverty is so wrenching and overwhelming that there is no way of turning it around without a resource flow sufficient to allow people to reforest; to allow people to stop the encroachment of the desert; to allow people to have the seeds and fertilizers necessary for whatever little plot of arable land they may have; to provide some income for the cash crops that are sold sufficient so that some of the arable land can go back into subsistence agriculture. In other words, a dramatic revolution in the whole agricultural sector is needed.

But you can't do it unless there is a response from the outside world because the poverty is terrible. It's the only continent where the infant mortality rate is rising; where the per capita income is dropping; where per capita consumption is dropping; where agricultural productivity is increasing between 1 and 3% per year, which is considered to be a triumph but does not maintain pace with population. 1987 was the first year in the last dozen where agricultural productivity maintained pace with population; 1988 does not look so auspicious.

For Africa then, sustainable development and the preservation of the environment *means an end to the wrenching poverty*.

Let me very simply deal with it. In the middle of 1986, all the countries of the world got together in the United Nations, and against whatever prophetic expectations existed, they managed by consensus to agree on a United Nations African program of economic recovery and development for 1986-1990. It was a desperate effort on the part of the African representatives to move themselves from the swamp of famine on the one hand to durable economic recovery on the other. It was the first time in the history of the United Nations that we got together to deal with the travail of one single region. And every single country cooperated. The program is a first rate program, well worth reading, because it deals with every single element of African recovery, focussing initially on agriculture, then agro-related industries, then desertification, then education and health, then small industry, then transportation and communications — all of it laid out with intelligence and lucidity.

Nobody held a gun to any head of the western countries that agreed to the program. And at the heart of the program there was an awfully useful concept. It was called a "shared partnership". And the definition of the partnership was quite simple. Africa would move heaven and earth to institute wrenching internal economic reform, and in response, the western world would provide sufficient resources to sustain the economic recovery. I can report with some personal knowledge that these countries are making *Herculean efforts* to turn their economies around. It is unbelievable to see the extent of human commitment and human sacrifice in these countries. It puts their societies at political risk. They are imposing on themselves economic reforms which are classic economic orthodoxy: you devalue your currency, you lay off thousand of workers in the public sector, you dismantle your state and para-state organizations, you take away consumer subsidies, you reduce expenditures on health and education, you put vulnerable groups at risk — women, children, the unemployed, you practice classic austerity and retrenchment in order to put the economy back on its feet.

It is the opinion of the World Bank and the International Monetary Fund, organizations I do not feel affectionate toward, but whose analysis is often valid, that 35 of the 44 countries of sub-Saharan Africa are engaged in this reform.

And they're *not going to make it*.

They're not going to make it because in the eyes of so many Africans, the western world is engaged in a simple and explicit betrayal of the commitment. Foreign aid is falling or stagnating. There are only four countries who have reached the target of 0.7% of gross national product: Norway, Sweden, Holland, Denmark. Canada is better than some — we're at least at 0.5%. The United States is at 0.2% and dropping; the United Kingdom is at 0.24%; Germany and Italy are at 0.4%. It's an ugly business when you undertake to sustain economic recovery and then you do not provide the foreign aid. Worse, the debt and debt servicing obligations are crippling the entire process of recovery. In 1980-83, the sub-Saharan countries paid an average of $3-5 billion in debt servicing obligations annually. Between 1987-89, they paid $15-25 billion; by 1995 they will be paying $45 billion per year on debt servicing obligations alone. How in God's name are those countries expected to survive economically, pursue sustainable development, preserve their ecology and their broader environment, when the poorest people in the world are thus taxed by those of us who are the most wealthy?

There was raised in some of the background papers prepared for the symposium the question of equity. *Equity*. You have 25% of the world using 70-80% of the world's resources, having all of the world's riches; and when enormously vulnerable countries come to you for some relief, you exact the last penny of interest as though you couldn't survive without it. The donor countries could forgive the African debt tomorrow morning and never even know it was gone. We lost on the stock exchange on one famous Monday in October 1987 *ten times the entire African debt*. And you will notice that capitalism is still limping along. There is something rotten at the core of a system that behaves so insensitively and punitively towards countries which are in the precise process of responding to every admonition and every requirement laid upon them.

And as if the loss of foreign aid and debt servicing obligations weren't sufficient, there is the whole question of commodity pricing. There are many countries whose entire foreign exchange is based on one or two crops. So they export their cotton, their coffee, their cocoa, their groundnuts; and the commodity prices collapse because the western world isn't prepared to stabilize them at a level that would provide reasonable incomes. In 1986 alone, they dropped 29% at a loss to Africa of $19 billion in one year — this at a moment of economic recovery. In the context of an international community for whom the environment is inextricably interlinked at every level, *this is madness*. That's what Mugabe meant when he went before the General Assembly of the United Nations and said "you can't talk to us about sustainable development, about massive reforestation, about ending soil erosion, about finding alternative sources of fuel, unless there is some economic recovery. Otherwise it's absolutely impossible. That may be your definition of equity," said Mugabe, "but it's our definition of *inflammatory injustice*."

So the principle of sustainable development, while worthy of preservation and application in the western world, is a little more difficult to apply in some of the more oppressed regions of the world.

Now why do I raise it so strongly? Because it's a question of *political will*. Is there the political will at international, national, provincial, or regional levels to make the very tough choices, which to some extent will be sacrificial to the western world, in order to accommodate the developing world? Is there the political will to make decisions which may indeed be very difficult for the corporate world and for consumers, that will ensure that future generations have something to inherit?

I don't think there's any recognition yet of the fact that the world is so interlinked and tied together, and I don't understand how complacently it is observed as time runs out. Because of course what is happening is *symptomatic* of the enveloping and escalating issues; therefore I want to take a minute on the whole question of climate. I think everybody understands that climate has suddenly emerged as the single most menacing environmental phenomenon. And therefore, if one wants to talk about sustainable development, one must meet the exigency now.

At the Toronto conference on climate change, Madam Gro Brundtland was there again; and she made another one of her magnificently eloquent and tempestuous speeches. She drew at the end an analogy that was unsettling, but coming from Brundtland you had to take it seriously. She said, quite simply, that climate change is probably the most menacing phenomenon on the face of the earth next only to nuclear war, and that the environmental implications and environmental consequences of the warming effect in terms of drought, in terms of agricultural productivity, in terms of rising sea levels, in terms of the cataclysmic, apocalyptic ... forgive me for using hyperbolic language, but the consequences for individual countries and regions are of course acute. The analogy to nuclear war was an analogy that was picked up, curiously, by all these dispassionate and clinical scientists who sat down to draft the document and said, "Yes, she's right. That's what's ahead if we don't come to grips with it." The warming effect is a combination of carbon dioxide discharge into the atmosphere largely from the burning of fossil fuels, and from the denuding of the forests (as the forests contain a great deal of carbon, the more forest you have, the less carbon wanders around in the atmosphere to do damage). Because these two factors together are so important — reforestation and the reduced use of fossil fuels — the conference came up with a number of simple, useful recommendations. They called for an immediate 20% reduction in the use of fossil fuels in the western world by early in the 21st century; I think it was by the year 2005. There was a very heated discussion that there should be a 50% reduction in the combustion of fossil fuels. They wanted to have a world climate fund, the effect of which would be to impose a 1% surcharge on the sale of fossil fuels, to generate money that would then be used in a fund to help some of the developing countries. And then they wanted desperately to engage in the restoration of the forests, because for every 10 million hectares that is taken down, only 1 million is reforested. That is in the world at large — in a continent like Africa, the ratio is not 10 to 1, the ratio is 29 to 1.

Well we all know now, and we all knew at the conference then, that we weren't going to turn things around without causing significant additional damage, some of it irreversible. But I raise with you the problems inherent in this principle of sustainable development; that you reduce your dependency on forces which eviscerate the environment in order to be able to do something for future generations. I want to say something which is descriptive and not pejorative. The countries involved with the Toronto climate change conference are, after all, conservative governments but they are not *conservationist* governments. They are governments which are strongly attached to the growth ethic; and if what drives the growth is the combustion of fossil fuels, you are not going to be able to engage in a significant cutback. Now maybe the fact that the OPEC countries have agreed to raise the price per barrel of oil in the last 24 hours will be in itself a deterrent. But you can't have a sufficient deterrent unless your government, in addition to deterrents, decides to explore alternative sources of energy and, in the process, provides very significant funding for it.

Well, I ask you to look at our own country. We've put billions of dollars latterly into megaprojects in the energy field, we've put a smidgeon of that money, a tiny percentage of that money, into alternative sources of energy. *This runs directly and explicitly counter to everything we know the world requires.* Canadians are the highest per capita users of energy on the face of the earth. We call a climate conference — we sponsor it as Canadians, we virtuously and self-righteously moan about the implications, and then we find billions of dollars to support projects which are the antithesis of the implications; and we have a few hundred million dollars to support the pursuit of alternative energy sources, which look as though they will be tens of years down the road before coming into fruition.

And how do you deal with the reaction of the developing world? The developing world is absolutely incredulous when you say to them, "You've got to reduce fossil fuel use by 20, 50, or 100%." They look at us and say, "What the devil are you talking about? It's the only fuel we have! You mean we're supposed to sacrifice our industrial revolution because of your depredations in the environment? Now that you've had it all as the rich First World, we in the Third World will have to sustain your wealth by a process of emasculating self-denial? Are you nuts? Have you lost your rationality? Are you deranged? You want us to collaborate with you in a process of avoiding destructive climate change? Sure! But there has got to be the transfer of resources. Because unless there is for us some alternative source of energy, say to wood, then that is what we will use for fuel because that is all we have. Our women (it is always the women) will travel fifteen to twenty miles a day just to find wood. We're not about to abandon this, and abandon ourselves, in order to serve the anxieties of the West."

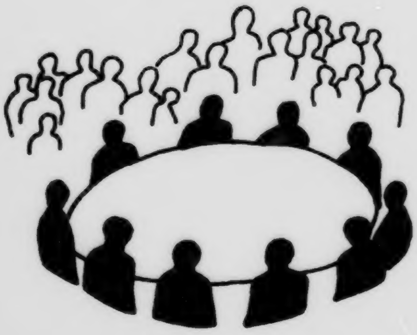
Do you think we're really going to set up a world climate fund with a 1% surcharge on fossil fuels? If you believe that, I have other things I'd be pleased to sell you which would be even less costly! But I don't see any evidence of political will; of governments being seized with the urgency of it.

And what about reforestation? Forests are now the link between all environmental priorities. One the one hand forests are what give us our ecological integrity; and on the other hand, forests absorb enough carbon that we may be able to limit the warming effect. So forests are the centrepiece. But reforestation costs money. One of the members of the Brundtland Commission was the Minister of Environment from Indonesia who said, "the Indonesian government is prepared to join the western nations in the effort to stop environmental destruction — *but you've got to provide the resources.* There has got to be some kind of equity."

I don't want to be horribly pessimistic, but I'm talking to you with a very great inner anxiety. It is all are moving so darned quickly, and there isn't any sense that I can divine of the political will in the western world that will make sustainable development a *shared* objective. Unless the entire world collaborates, the objective will be frustrated.

We're talking about an international convention for the year 1992, where we can set out the benchmarks for climatic change and environmental preservation. But given the tensions and the hostilities that are now extant, I don't hold out very much hope for that convention. So forgive my pessimism.

But let me say that it seems to me, by virtue of the nature of this struggle, that symposia like this are indispensable. Advocacy is the only means of achieving what we must achieve. As Professor Bill Rees has stated, *people must acquire in their bones a sense that violation of the biosphere is a violation of self.* This speaks exactly to what sustainable development is about: no matter what one is engaged in, a violation of the biosphere is ultimately a violation of the human condition.



I judge (forgive my interloping quality) that even in BC there are imperfections. I know that in Canada there are some jurisdictions that think sustainable development means simply souped-up environmental assessment procedures. We set up a National Task Force on Environment and Economy which came up with numbers of recommendations. But at the heart of the task force was a *continued devotion to economic growth.* There is a point at which economic growth, particularly in its dependence on fossil fuels, runs head on with the principle of sustainable development. I guess it is always true that while it is lovely to have the corporate world participating in such task forces, the vested interests are too strong to allow for the flexibility that's required. So beware environmentalists! Don't get co-opted into the round tables that everybody is talking about and which are, I suspect, from time to time, exercises in sophistry.

In B.C. itself, according to one of the background papers prepared for the symposium, there is no conservation strategy; the Economic Development Strategy barely mentions the environment and only then in the sixth point of a six point strategy. There is a whole litany of high profile issues from Strathcona Park to the Stein Valley. There are obviously real collisions occurring between environmental preservation on the one hand and community needs on the other; and there is little comprehension on the part of this government, as is the case with other governments, about the way in which the political will must operate. Indeed it seems it is difficult to get any government involved *unless one engages in tenacious advocacy.*

This leads me to the last point. In every single area of sustainable development, whether it's in B.C. or in Canada or internationally, where you are trying somehow to allow economic growth and major projects to be consistent with environmental protection so that the benefits of this generation are not denied the next generation, more that at any time in history, *it comes down to a question of resources*. Why? Because there is so much at stake. If one is really going to find alternative sources of energy, the implications in dollar costs are enormous.

And there is only one place in this world where this money can come from. We have an equation between environment and development; *there must now be an equation between disarmament and development*. There is just no other source in this world for sufficient amounts of money to be freed to do the job domestically and internationally. Some of these resources will be used for indigenous needs such as job creation, or deficit reduction. But some of them can be directed to international development of a kind that is consistent with sustainable development. When the world is spending over a trillion dollars a year on the arms race, then you have a fund which, if sanity can be induced, may yet save the word from itself, and make the whole debate about sustainable development *real* for the 80% of the world for whom it is presently unreal.

And *that* is what is so excellent about the environment. No matter how you examine it, it leads ineluctably to peace; because fundamentally, *the environment is life itself*.

THE CHALLENGE OF SUSTAINABLE DEVELOPMENT

> The best predictions available indicate potentially severe economic and social dislocation for present and future generations, which will worsen international tensions and increase risk of conflicts between and within nations (Environment Canada 1988).

The apparent range and scale of so-called environmental problems has increased dramatically in the last two decades. In the 1960s pollution and resource management problems were generally regarded as local or regional issues, and often focussed around aesthetics. (e.g., pulp mill odour) rather than functional ecological damage (accumulation of toxics — dioxins and furans — in the food chain). The official response was correspondingly limited in scope and effect (unenforced effluent permits and regulations) (WCELRF 1989).

In the 1980s it has become clear that human economic activity has seriously damaged the structural integrity of major ecosystems on every continent. To the extent that human populations are dependent on these ecosystems for essential renewable resources and ecological services, their future security is at risk. Moreover, the most worrisome ecological trends are global in scope and equally threatening to all the world's peoples and nations.

In these circumstances, no political jurisdiction can escape the negative effects of a collective failure to act and none can escape its responsibility to contribute to the global solution. Each must take effective action both within its own boundaries and at the international bargaining table. Governments long preoccupied with managing world trade and markets are being forced to recognize that it is not only the economy that has become globally integrated, but also its environmental consequences or so-called "negative externalities."

In this context, Canadians should note that they are among the world's greatest (and most inefficient) *per capita* users of energy, and among the largest *per capita* users of most other significant resources. The impact of each Canadian on the environment is equivalent to that of 40-50 third-world residents. Our 25 million citizens make the same demands on the biosphere as a billion of the world's poor. Thus, on a *per capita* basis, **Canadians are among the world's greatest contributors to global environmental deterioration, and have a corresponding obligation to lead in the search for solutions.**

While more and more people are becoming concerned about the state of the environment itself, few have made the connection to the potentially massive economic implications of taking effective action to halt ecological decline. What do such trends as global warming

POLICY IMPLICATIONS OF CLIMATE CHANGE IN BRITISH COLUMBIA

In British Columbia, under a framework of adaptive management, the following actions could be implemented at a provincial or local level. These actions are oriented in the short and intermediate term to managing the activities that contribute to climate change. In the long term we will have to consider the implications of climate change and reconsider our current management practices. For those people interested in specific actions regarding climate change at the international level, refer to the recommendations of the global climate change conference (Environment Canada 1988).

Short term (1 - 5 years)

- Information programs to 1) wake people up and get them thinking in longer time frames, especially developers, managers in industry and business, and politicians; and 2) educate people, especially children, about our connections with the physical environment. This process can contribute to demystifying climate change and letting people know they have an important role to play in finding solutions.

- Substitute other products for those known to have detrimental effects: i.e., different gases in refrigerators, natural gas for cars, safe packaging for fast foods.

- **Reduce demand for cars: encourage bicycles, pedestrian-based shopping, more convenient mass transit, etc.**

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- Initiate cooperative research programs to better understand the implications of climate change in B.C., especially the impacts of rising sea levels. Should development be allowed to continue at present rates in Richmond or Delta? To what degree will fish and wildlife resources be affected and can we mitigate these effects?

- Integrate local monitoring programs, such as the Greater Vancouver Regional District's new comprehensive air quality management plan, with a province-wide monitoring program to determine changes in key parameters such as CO_2, ultra-violet radiation, and low level ozone. Investigate opportunities for coordinating this program with international monitoring efforts.

- Have policy makers share their information needs with climate researchers to make climate research more relevant to public policy needs.

Intermediate (5 - 10 years)

- Practice more flexible resource planning. Avoid long term, irreversible commitments of land uses. For example, if croplands are in jeopardy, due to climate change, this information should feed back on decisions respecting agricultural land reserves and conversions to non-agricultural uses.

- Decentralize energy production and reduce fossil fuel use by encouraging the development of alternative energy sources.

- Encourage greater food self-sufficiency within the province so we are less susceptible to the effects of potential climate change in California and Mexico.

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and the eroding ozone layer mean for present patterns of economic activity and what are the likely consequences of serious approaches to economy/environment integration?

Unfortunately, no one can answer these questions in detail. As these proceedings emphasize, there are real economic and development opportunities associated with the development and marketing of sustainable products and the technologies to produce them. However, such trends as atmospheric change and the uncertainties associated with them "will provide an additional measure of risk to any investment," including those required to develop the needed ecologically benign technologies (Ireland 1988, p.22). Overall, it seems likely that climate change and associated trends "will have significant downward impacts on world production and gross national products and on the *per capita* incomes of the world's residents" (Ireland 1988, p.13).

Thus, while "environment" consistently sits near the top of Canadians' list of national concerns, there is little indication that such negative possibilities have penetrated the national consciousness. Certainly no political leader has dared to broach the environmental issue in quite this way. After all, this is a period of steady economic growth and rising expectations. In 1988, a critical election year, trade and economic growth issues dominated the political debates in Canada (and there don't appear to have been any issues at all in the US Presidential campaign).

Informed citizens can only be dismayed at the superficial treatment of environmental problems everywhere. Our leaders talk about getting serious with industrial polluters, but there is no sign yet of movement toward true environment/economy integration within the ecological limits needed to ensure long-term ecosystem integrity. We seem to have a perceptual block that maintains the separation of "environment" from serious economic matters. If ecological trends do precipitate a crisis, this cultural inertia may turn out to be as great a threat to human well-being as environmental decay itself.

THE NATURE OF THE BEAST

Climatic change, acid/toxic precipitation, and disappearing ozone are examples of environmental metaproblems with the following characteristics which make them particularly intractable to management:

- While the political decision-making process prefers certainty and predictability, **both the magnitude and precise effects of global ecological problems are clouded with uncertainty.**

- The inherently "systems" nature of environmental problems confounds our compartmentalized and fragmented management institutions. For example, **future energy policy is likely to have a greater impact on food security than our agricultural policy.**

- In cases where key ecological mechanisms and processes are unknown to science, **ecological impacts cannot be predicted or discovered until they occur.** (e.g., many dimensions of the ozone and acid rain problems were only discovered after the fact.)

- Decision-makers will increasingly be confronted with choices between alternative "what if" scenarios. To this extent, **environment-related decisions will be based more on political**

judgement calls than objective technical analyses. This reality underscores the importance of public education on global environmental change, so that painful but necessary policy initiatives will be politically acceptable.

- Global ecosystems are characterized by great internal resilience and inertia, resulting in lags of years to decades between cause and effect. This applies equally to damage-causing activities and corrective responses. **The lack of environmental feedback results in social inertia leading us into an ecological trap.**

- The lag effect means that: a) if we wait for certainty before taking action, it may be too late; and b) major ecological problems can only get worse even after appropriate action has been taken. In short, **political hesitation may result in irreversible damage to critical ecosystems or biosphere processes.** (For example, *nothing* we can do today will repair the ozone layer in the near-term future.)

The possible direct impacts of such problems as climate change and ozone erosion should be sufficient to inspire decisive action, and the foregoing problem characteristics can only heighten our sense of risk. Yet, if the general picture has been clear for some time, there is little evidence that society is willing to change significantly its way of "doing business."

OUR COMMON FUTURE:
THE ROAD TO SUSTAINABLE DEVELOPMENT

The concept of "sustainable development" has been around in various guises for several years (see, for example, Brown 1981). However, it seems to have acquired popular momentum with the recent publication of *Our Common Future*, the report of the United Nations "World Commission on Environment and Development" (WCED 1987). The UN report addresses the growing tensions between environment and the economy, and advocates "sustainable development" as the only viable route to world political and ecological stability.

The juxtaposition of "sustainable" with "development" naturally inspires the enthusiasm of people on all sides of the economy-environment debate. In light of worsening global environmental trends, any concept that implies we can eat our developmental cake and have the environment too, is bound to have a certain popular appeal.

The World Commission added to the groundswell of popular support by defining sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Nothing very threatening here. Who wouldn't support development that promises all human "needs" will be met indefinitely into the future?

However, in their initial enthusiasm, many people forget that *Our Common Future* goes on to define "needs" as the "essential needs of the world's poor, to which over-riding priority should be given." It also recognizes the "limitations imposed by the state of technology and social organization on the environment's ability to meet (those needs)" (WCED 1987, p.43).

To some ears, such words are a clarion call for political recognition of global economic injustice and real limits to growth. They seem to imply that any serious attempt at sustainable

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Long Range (10 - 50 years)

The following questions need to be addressed now because the implications are long term.

- If climate change leads to a decline in forest productivity: where will people be employed; what kind of alternative materials can be used for new home construction, paper, etc.; what species should we use to restock our forests; should we change our current harvesting schedules?

- If climate change improves British Columbia's agricultural capability, will we be in a position to take advantage of the new conditions? How will we accommodate possible reductions in food production from California? What are the land use planning and agricultural implications in B.C. of reduced productivity on prairie farms? How can consumer demands be adjusted to new realities?

- Knowing that the structure and energy intensive functions of our urban areas are a major cause of climate change, can we continue to: plan extensive transportation networks based on fossil fuel vehicles; build "permanent" infrastructure in low-lying coastal areas; foster energy-intensive, rather than energy-conservation, lifestyles?

— D. Colnett 1988, pp. 12 - 14

development will require more equitable sharing of the world's resources and acceptance of social and ecological constraints on economic expectations.

But there is another side to the message of *Our Common Future*. The Commission equated sustainable development with "more rapid economic growth in both industrial and developing countries" on grounds that "economic growth and diversification ...will help developing countries mitigate the strains on the rural environment, raise productivity and consumption standards, and allow nations to move beyond dependence on one or two primary products for their export earnings" (WCED 1987, p.89). Accordingly, the Commission suggests "a five- to ten-fold increase in world industrial output can be anticipated by the time world population stabilizes some time in the next century" (WCED 1987, p.213).

To those who regard present levels of industrial activity as the root cause of global environmental decline, the Commission's appeal for a "revitalization" of economic growth on this scale seems paradoxical at best. Global development to first world levels, based on existing energy- and material-intensive technologies, is simply not in the ecological cards.

> If the Chinese were able to stop their population growth in its tracks at 1.1 billion, (and they are not going to be able to do that), and if they were willing to scale back their development plans so they would only increase their per capita energy consumption from about seven percent to about 14 percent of [US consumption], (a very small increase by our standards), that increase would inject more carbon dioxide into the atmosphere annually than [the US] could keep out of the atmosphere by completely giving up coal burning in the US — and the US now gets 23.5 percent of its energy from coal.
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> — Ehrlich 1989

Thus, while *Our Common Future* has contributed to a consensus that the world must move to sustainable development, there is no general agreement on how we might get there. What does seem clear, is that even the easiest path will involve major adjustments to the *status quo*. The WCED itself recognized that for its projected levels of growth to be environmentally sustainable, **the quality of that development, particularly in industrialized countries will have to change radically** (WCED 1987, p.213).

Most likely, we will find ourselves travelling several paths at once. We should begin now to make the necessary "radical" changes in present patterns of growth and development and to invest in the ecologically benign technologies that will be needed in the future. But the industrialized countries may soon have to confront the possibility that growth has its limits, that living standards for some may have to be reduced that others might live at all. This has very different implications for the shape of "our common future" than any perpetual growth-based model.

Whatever happens, we need general agreement on the overall goal for sustainable development. One possibility consistent with the present discussion is as follows: .

To provide a secure and satisfying material future for everyone, in a society that is equitable, caring, and attentive to basic human needs.

SUSTAINABLE VS. "TRADITIONAL" FORMS OF DEVELOPMENT

It might be argued that for decades the industrialized countries have managed to sustain their growing economies through technological advances and that they should be able to continue doing so indefinitely. However, there are two fundamental problems with this historic form of "sustainability." First, it has been achieved by continually shifting growing demand from one declining source of resources to another, a pattern that is becoming as true for many potentially sustainable resources (forests, waters, soils, fisheries, even the atmosphere) as it is for inherently nonrenewable ones.

Second, the cumulative by-products of present technologies — greenhouse gases, CFCs, toxic wastes, acid precipitation and myriad other forms of pollution — have begun to undermine key ecological functions performed by the remaining biological resource base, and with them the stability of the biosphere as a whole.

It is precisely this pattern of shifting economic opportunism driven by ecologically insensitive technologies that has become unsustainable. There are no more continents to discover, no more "primitive" peoples to colonize. **We are our own last frontier.** Having reached our planetary limits, mounting pollution and overexploitation of renewable resources threatens the security of people everywhere. Even the oceans and the atmosphere, those vast reservoirs long thought to be indifferent to human activity, are showing critical signs of stress.

Sustainable development differs from traditional development in that it explicitly recognizes our **obligate dependency** on a healthy biosphere. Ecological processes generate the soils, produce our food, purify the waters, and regulate the climate. Simply put, ecosystems produce "the environment." They can no longer be seen as mere expendable resources to be exploited without limit for non-essential economic gain. A sustainable future depends on the long-term maintenance of the world's ecological capital, and this necessarily takes precedence over the short-term growth of physical or financial capital. The need to maintain the functional integrity of the biosphere has become a real constraint on any form of material growth that might threaten it.

In this context, it is well to remember that global environmental deterioration is the cumulative result of innumerable development decisions affecting local ecosystems all over the world. Many of these are "top-down" decisions taken by central bodies far removed from the direct ecological consequences of their actions. Such institutions as the World Bank, multinational corporations, and national/provincial governments, act on behalf of corporate or national interests that may be quite insensitive to local ecological realities. Even in Canada much economic development is still characterized by a metropolitan-hinterland axis in which resource development decisions taken in "the national interest" override local environmental considerations, including any direct economic dependence affected communities may have on the productivity of local ecosystems.

By contrast, sustainable development places a priority on the need to maintain ecological diversity and productivity in developing regions. It therefore favours increased community control over development decisions affecting local ecosystems, which in turn fosters increased regional self-reliance. This bottom-up approach may require the devolution of greater decison-making authority to regional and local levels, albeit within the broader national/provincial policy framework.

On the other end of the scale, sustainable development recognizes that the biosphere is the common home of all humankind, and that joint management of the biosphere is prerequisite for global political security. Indeed, ecological security can only be assured if the logic and basic principles of sustainable development are accepted and implemented cooperatively by all major nations and developing regions. Sustainable development is therefore necessarily more cooperative at all levels of social organization than are present approaches.

A WORKING DEFINITION OF SUSTAINABLE DEVELOPMENT

The following is offered as a working definition of sustainable development on a society-wide basis:

Sustainable development is positive socioeconomic change that does not undermine the ecological and social systems upon which communities and society are dependent. Its successful implementation requires integrated policy, planning, and social learning processes; its political viability depends on the full support of the people it affects through their governments, their social institutions, and their private activities.

Several characteristics of sustainable development are implicit in this definition. Sustainable development:

1. is oriented to achieving explicit ecological, social, and economic objectives;

2. may impose ecological limits on material consumption, while fostering qualitative development at the community and individual levels;

3. requires government intervention, but also the leadership and cooperation of the private sector;

4. demands policy integration and coordination at all spatial scales and among relevant political jurisdictions;

5. depends on educational, planning, and political processes that are informed, open, and fair.

— W. E. Rees 1988a, pp. 3 - 4

ENVIRONMENT AS CULTURAL MYTH

Part of the problem is a perceptual one deeply rooted in our Judeo-Christian heritage, and the superior place it affords humankind in the overall scheme of things. This perception was greatly extended by 17th Century philosopher Rene Descartes and his separation of "reality" into the independent realms of mind and matter. While this seems like a trivial notion today, its impact was profound. It established a perceptual framework that enabled people to perceive their intellectual and socioeconomic activity as separate from a physical reality "out there." In effect, Descartes provided the conceptual tools for western society to invent the environment. "Environment" is a cultural myth. **We made it up!**

The notion of environment as a separate entity is fundamental to industrial society. We have long perceived that entity as an unlimited storehouse of resources and an infinite sink for wastes. Its "otherness" makes it easy to exploit and insulates us psychologically from the consequences of both pollution and resource depletion. These perceptions are

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Finally, by recognizing that there may be real ecological limits on quantitative economic growth, sustainable development directs serious attention to the issue of distributive equity as an alternative means of ensuring acceptable living standards for all. The World Commission reported that the 26% of the world's population living in developed countries consumes 80-86% of non-renewable resources and up to 34-53% of food products (WCED p.33). Ethical and moral factors suggest that reducing the present gap in standards of living between the rich and poor (between and within nations) may well require that the rich reduce future expectations, and even present consumption, so that the poor may enjoy a fairer share of the world's resources.

Shifting World-views?

It could be argued that anything less than this broad conceptualization of sustainable development would be an inadequate response to the warnings of both environmental and social scientists. Nevertheless, the implied development model is radical by today's standards because of its acceptance of ecological constraints on human activity, its dependence on social learning and cooperative planning processes, and its recognition that existing *ad hoc* management practices are part of the problem.

For these reasons, successful implementation of any such approach may depend on a shift in our cultural perception of our proper role in the scheme of things (the evolution of a modified world-view). This may already have started, through enlightened self-interest in the fatal implications of global ecological deterioration. People may ultimately come to understand that it is as socially unconscionable to advance an ecologically bankrupt development idea as it is foolish to promote an economically bankrupt one.

FROM SUSTAINABLE DEVELOPMENT TO SUSTAINABLE SOCIETY

Many of the proposals emerging from proponents of sustainable development call for substantial price increases to reflect the "true costs" of, for example, food, lumber and gasoline. Indeed, when gasoline shortages in the 1970s caused prices to skyrocket, our gasoline consumption decreased enormously and was accompanied by increased demand for alternative fuel sources. Raising prices for necessities like food and gasoline, however, is an extremely inequitable method for reflecting the true costs of their production. There are many people who already pay more (as a percentage of income) for necessities such as food, shelter, and transportation than they can sustainably afford.

Many of the "ecological" proposals debated in North America during the early 1970s suffered from precisely such inadequate attention to equity concerns, and the furor they engendered is partly responsible for the urgent situation we find ourselves in now, nearly 20 years later. We must decidedly provide a means to reflect the true costs of production, but without the spectre of contributing to starvation or homelessness. This requires that we not confine ourselves to strictly environmental questions, but address the broader issue of creating a sustainable society.

There are two prerequisites of a sustainable economy: a fairer use of resources; and a more careful, conserving use of resources. Both would enable an improvement in the conditions of the world's poorest, without the damaging effects of competitive economic growth.

The principal conditions of a sustainable society - one that to all intents and purposes can be sustained indefinitely while giving optimum satisfaction to its members - can be simply stated:

1) minimum disruption of ecological processes;
2) maximum conservation of materials and energy - or an economy of stock rather than flow;
3) a population in which recruitment equals loss; and
4) a social system in which the individual can enjoy, rather than feel restricted by, the first three conditions (Ecologist 1972).

Simply stated, perhaps, but the social implications of such a transition - of "sharing smaller pies" (Bender 1975) - are profound. For the last two hundred or so years, economic growth has been considered the major instrument of social policy. As long as the pie is growing, everyone's absolute share is greater, and the fight over relative shares is less intense. But in a sustainable economy, absolute and relative shares move together, and the focus will shift from the distribution of income to the far more critical issue of distribution of wealth (Daly 1973, 1980).

At first blush, the re-development of North American trillion-dollar economies for sustainability may seem like an impossible dream. In this regard it is instructive to look at modern China, which in a twenty-five year period leaped from extreme poverty to material adequacy with a population about four times as large as the US and a GNP of about one-tenth the size of the US. This is *not* to say that Canada and the US should adopt the Chinese system. What the Chinese experience *does* strongly suggest, however, is that rapid socio-political change is possible as well as necessary. North Americans in particular should be able to adjust to such change more easily than poorer, heavily populated countries. Our own experience with the oil shortages and gasoline price hikes in the 1970s, for example, demonstrates that we need not equate reduced energy consumption with living in the Stone Age.

A sustainable economy recognizes that where there are limits to growth, it must meet the basic needs of every member of society. When the private sector fails this must be achieved via community or government programs. There must be a floor of income and services which are universally available to the whole population and which remove the fear of poverty. They must be provided at a cost that everyone can afford. They must be equally available to men and women and must be provided without any racial, religious or ethnic discrimination.

From the perspective of sustainability, the basic purpose of a healthy economic system should not be the pursuit of affluence or ever-higher growth of the GNP. Rather, its purpose should be to provide an adequate, economically secure way of life for everyone in the society, in which there are neither rich nor poor, exploiter nor exploited, where attitudes of cooperation and mutual aid are fostered to the utmost, where everyone has a voice in the decisions affecting them, and in which economic activity is carried out in harmony with environmental requirements.

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at the heart of the problem. Think how different things would be had our culture evolved instead from a sense of oneness with the world.

By definition, humankind cannot be part of "the environment." The very word separates "us" from "it." But the global reality belies the myth. The truth is that human beings are now the dominant species in all the worlds ecosystems and the most powerful geological force on earth. From this perspective, **we do not have environmental problems, the biosphere has a people problem.** There can be no solution to our present dilemma unless we are prepared to accept this reality.

There is only a singularity, the biosphere, and we are in the thick of it. Like it or not there is no "away." It is ironic, that **to resolve the environmental crisis we must first give up the environment.** This is the real meaning of environment/economy integration as we contemplate the move to sustainable development.

— W. E. Rees 1988b, pp. 10 - 11

CHINA CHOOSES ECONOMIC GAIN OVER OZONE

BEIJING – Mounting international pressure to limit ozone-destroying gases has compelled China and many other developing countries to choose between prudence and prosperity.

In Beijing, the choice is clear.

China cannot afford the high cost of substituting alternatives for industrial gases that erode the atmospheric ozone layer protecting Earth from harmful ultraviolet radiation, according to Chinese officials. So, like countries already industrialized, it will risk damaging the environment in its drive for prosperity, they say.

Unless developed countries help it switch to alternatives, China will continue making the destructive gases at a rate that could make it a major producer in the next decade, according to China's National Environmental Protection Agency.

— Christian Science Monitor 1989

One can also, of course, envision a "sustainable" society that is highly centralized, hierarchical, and bureaucratic, where the very rich live in luxury at the expense of the very poor, where competition has replaced compassion, and where decisions are made in isolation by the technical elite on the basis of ecological "efficiency." Such a society could be considered "sustainable" in the narrow sense of preserving resources for future generations, but would not be a pleasant society for most of its people.

Central to the proposal of an equitable sustainable society is the creation of a decentralized management and social system (Ecologist 1972; see also Sale 1980; RAIN 1981). Decentralization enhances community self-reliance and participatory democracy, which are essential components of social self-determination. Some of the reasons why decentralization would benefit sustainable development are:

1) it would promote the social conditions in which public opinion and full public participation in decision-making becomes as far as possible the means whereby communities are ordered;

2) more integrated and diversified agriculture will reduce the energy and time spent for costly transportation and be ecologically more stable than monoculturalism and large-scale farming;

3) in a society where industries are small, and responsible to the needs of the community and the wider public, it will not be necessary for people to choose between jobs or ecology;

4) it is probable that only in the human scale community can a man or woman become fully and freely individuated; and

5) it is only by decentralization that self-reliance can be increased — and community self-reliance is vital in order to minimize the burden of social systems on the ecosystems that support them.

A sustainable society must be one in which children can grow up without fear of hunger, where women and men can live in dignity, and where the elderly can live out their final years without fear of destitution. Everyone should be assured of at least a minimum standard of living for their entire life. All should be protected against misfortunes so that they need not fall into economic misery through no fault of their own.

The United Nations Universal Declaration of Human Rights addresses many of these concerns. Member States, including Canada, have pledged themselves to achieve, in co-operation with the United Nations, the promotion of universal respect for and observance of human rights and fundamental freedoms. These include Article 25, Section 1, which reads:

> Everyone has the right to a standard of living adequate for the health and well-being of himself and his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control (quoted in Sieghart 1986, pp. 172, 176).

These assurances are vital in a sustainable economic system, because such a system should be one in which risks are shared, people in need are cared for, and poverty is eliminated. They are also crucial because they can help provide the base of economic security which will enable people to simplify their lifestyle without having to worry about impoverishment as a result. Meeting basic needs and sustainable development thus go hand in hand.

Where Will the Money Come From?

So-called fiscal conservatives will surely protest that sustainable development is extravagant and will require new taxes, deficit spending, and all kinds of other politically unpopular measures. The truth, however, is that it is *un*sustainable development that is extravagant, both fiscally and ecologically.

Traditional concepts of political and military security lose their meaning in a world without ecological security. Yet in 1985, global military spending exceeded $900 billion, *more than the total income of the poorest half of humanity* (WCED 1987, p. 297). In fiscal year 1989, the Pentagon is asking the US Congress for nearly $300 billion, which equals the total gross domestic products of the countries that contain the poorest 25 percent of the world's population - about 1.5 billion people. *Together, the US and the USSR spend on the military as much as the 3 billion people (60% of the world's population) in the 44 poorest nations earn* (Barnaby 1988, p. 256).

Sustainable development will not come cheap. It has been conservatively estimated that expenditures approaching $150 billion (US) per year, above and beyond current expenditures, would be required to begin reversing ecological decline and moving toward sustainable development by the end of the century (Worldwatch 1988, p. 183). Thus the real issue is not how much money we have to work with. The real issue is how we spend the money we have.

SUSTAINABLE DEVELOPMENT GOALS

International Sustainable Development Goals

According to some observers (e.g., Barnaby 1988), we may have as little as 15 years left to reverse the nuclear arms race and halt poverty, famine and world climate change. We have to gain time, to have a breathing space during which the drift to eco-disaster and nuclear catastrophe can be stopped and reversed, and long-term planning for sustainable peace can begin. Buying this time demands bold action: an emergency program to allow human survival into the 21st century. And this has to rely on existing institutions — governments, regions, financiers and the United Nations — for its success. At the very least this program must include measures to:

- halt the nuclear arms race, control military technology and severely reduce arsenals;
- prevent the spread of nuclear weapons ownership;
- increase détente and regional security;
- restrict, and then end, the arms trade;
- reduce conventional forces and military budgets in all nations, and divert the effort and finance so released to development;
- reform terms of trade and resolve the debt crisis;
- achieve food and livelihood security, population control and an "ecofreeze" — a halt to deforestation, desertification, genetic loss and atmospheric pollution with its attendant acid rain, ozone depletion and global warming (Barnaby 1988, pp. 194, 208).

Examples of Sustainable and Unsustainable Development

Here are some practical examples of sustainable development from a variety of ecological and social settings:

- Aid programs that empower local people in the third world to increase food production using technology appropriate to local ecological conditions;
- Development programs that respect and enhance local adaptations to prevailing ecological conditions. (e.g. Nomadism in sub-Sahelian Africa was a cultural ecological adaptation to seasonal shifts in rainfall. Aid-abetted settlement has contributed to over-grazing, desertification, and recent famines in North Africa);
- Limited or no-tillage organic agriculture anywhere;
- Resource co-management programs that place priority on native subsistence requirements instead of commercial or recreational demand;
- Development designed to displace nonrenewable forms of energy with renewable solar-based forms such as wind and photo-voltaic electricity, hydrogen fuel cells, solar heating and cooking. (Solar economies, either high-tech or low tech, may be the only truly sustainable economies);
- Community development as practised by Amish, Hutterite, or other sects who disavow labour-displacing, land-destroying technological innovations in favour of human and animal labour. (Some "Old Order" communities are essentially solar-based);

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Examples of unsustainable development activities include:

- Aid programs that facilitate the concentration of land ownership, undermine local staples production, and encourage cash cropping for export (often required to earn money to pay off the "development" loan);
- Related to the above, the introduction of technological "innovation" from the north temperate zone (e.g., gasoline-powered machinery, irrigation schemes, chemical fertilizers, etc.) that may have a short-term economic payoff, but are ecologically inappropriate for arid, semi-arid, tropical and sub-tropical ecosystems;
- Current machine and energy-subsidized practices in first world agriculture managed under financial and market conditions that force farmers to mine the soil. (Even Canadian farmers have reduced the organic and natural nutrient content of prairie soils by 50-60% in 70 years; typical soil loss from cultivated lands in the US and Canada amounts to 9-12 tons/acre/year or as much as 10 times the sustainable rate);
- Irrigation schemes that produce short-term gains (and dependencies) but lead eventually to destructive salination of the soil;
- Use of chemical fertilizers that produce short term gains but lead eventually to loss of production due to soil acidification;
- Destruction of tropical rain forests for agricultural settlement in laterite soil areas (Most of the essential nutrients are contained in the tree biomass, and are lost in logging or burning);

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Sustainable Development Goals for Canada and British Columbia

Bold international efforts to achieve sustainability must be complemented by national, provincial and community efforts. The following are some brief examples of the kinds of goals Canadians and British Columbians should be considering if we are serious about sustainable development.

Resources

Aim for a major planned reduction in resource use per unit of industrial production. Products should be built for durability, repairability, and recycling. Minimize "throughput." Aspire to the goal of waste elimination. Emphasize conservation.

Capital

Set the capital investment rate equal to the depreciation rate. Encourage production for social use rather than private profit. Revise the GNP indicator to measure ecological and social costs and benefits, as well as economic factors.

Taxes and Incentives

Production and goods that damage the environment or use energy inefficiently should be heavily taxed. Activities that encourage sustainability and diversity, are environmentally benign and improve human well-being should carry incentives.

Pollution

Replace ecologically faulty technologies wth ecologically harmonious ones. Strive for essentially complete recycling and reprocessing of all re-usable metal, glass and paper products. Synthetic products should be replaced by natural ones, wherever possible (e.g., using biological pest controls). Aim for essentially complete containment and reclamation of wastes from combustion, smelting and chemical operations. Make smokestacks rare.

Technology

Seek processes that conserve materials and energy, are non-polluting, durable and appropriate. Gear technology to social needs and ecological efficiency. Focus on quality.

Science and Education

Redirect funding from military budgets to sustainable re-development projects. Establish Peace Studies programs in schools and universities. Teach nonviolent conflict resolution methods at all levels of schooling, in workplaces, and through television programming.

Services

Provide a floor of guaranteed minimum universal services (free health care, guaranteed housing, job re-training, etc.) to the entire population; give people assurance that sustainable development will not mean loss of economic security.

Advertising

Use the precedent of restricting cigarette advertising to restrict advertising for products that damage the environment or use energy inefficiently. Allow equal access for nongovernmental organizations to educate people on the ecological and social consequences of their consumption patterns. Discourage advertising aimed at getting people to purchase more and more and be dissatisfied with what they now have.

Transportation

Encourage widespread mass transit, bicycles, and walking. Stop subsidizing private autos (e.g., by building roads). Autos should be converted to power by steam or other non-polluting, low resource-using engine. Make cars available through public car-rental facilities; discourage car ownership. Tear up city streets and parking lots and plant them with gardens, grass, trees, bike paths, and walkways. Land-use planning should aim to better integrate work and home, reducing the need for commuting.

Consumerism

Discourage production of non-essential goods such as electric carving knives and hundreds of kinds of hair spray. Focus on providing food, clothing, housing to the whole population. Create incentives for recycling and reprocessing of a wide range of materials, e.g., metal, glass, paper, furniture, clothing. Encourage qualitative growth, e.g., the arts, culture, lifelong learning.

Food and Agriculture

Support strict land use planning to prevent speculation; encourage farming, green belts, wilderness area preservation, protection of wetlands and estuaries. Greatly reduce the use of inorganic fertilizers and chemical pesticides. Treated sewage and garbage should be processed and transported to farms and used for fertilizer. Divert capital into food production to assure sufficient food for the world.

Energy

Seek a great reduction in energy use. Encourage reliance on energy sources which cause minimal or no pollution, e.g., solar energy, wind power, etc.

Planning

Encourage planning developed through democratically-controlled bodies and aimed at governing production by social and ecological criteria, rather than by quarterly profit statements.

Critics of every stripe will no doubt attempt to dismiss these proposals as draconian or politically unacceptable. Ask yourself honestly, however, which approach is unacceptable — a society in harmony with nature that meets the basic needs of all its citizens, or a society in constant combat with nature while using its military power to perpetuate an inequitable global system of great affluence for the few and great poverty for the many? (WCED 1987, p. 303) Which approach is sustainable? What kind of a world do we want to leave for future generations? How we respond to these questions in the next few years will determine the fate not only of our nation, but of the world.

- Projects to displace petroleum-based automotive fuels with alcohol derived from energy crops, at the expense of staples food production for local people (a growing controversy in Brazil);
- Hydro-electric/irrigation projects that initially boost production and create dependencies, but which fail when the reservoirs fill up with sediment produced by similarly unsustainable forestry or agricultural practices (a common situation in the third world).
- Market-driven fisheries and forestry practices that have led to stock depletion and destruction of future productive capacity almost everywhere, including Canada and the US.
- the kinds and levels of economic activity and technology currently producing continuous deterioration in key environmental quality indicators (e.g., the buildup of carbon dioxide and other greenhouse gasses, ozone depletion, acid rain).

— W. E. Rees 1988a, pp. 13 - 15

Government incentive programs can have dividends. Between 1977 and 1984, California developed efficiency standards for buildings and appliances. Texas did nothing. By 1984 the average Californian used 267 fewer kilowatt hours than in 1977, while the average Texan used 1,424 kilowatt hours more.

In Canada, the federal government has cut back its incentive programs and has cut financing for programs aimed at developing alternative energy.

— C. McInnes 1989

ENDNOTE

This chapter is based on three of the background papers prepared for the symposium: W. E. Rees 1988a, 1988b, and M. Roseland 1988.

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An Environment Canada study by Dr. Bhawan Singh of the University of Montreal on the expected effects of global warming on agriculture, forestry and power during the next 50 years found that in Quebec the number of days during which homes would require heating would drop substantially — by 25 per cent for Montreal and 35 per cent for Quebec City — resulting in lower heating costs.

More rainfall in the James Bay area could result in a potential 15-per-cent increase in hydroelectric generating capacity, the southerly hardwood forest could triple, agriculture in some northern regions could be expanded and the potential for grape and apple cultivation in all regions is expected to increase.

— R. Ludlow 1989

A warming of the Earth's climate could mean higher crop yields in Canada and northern US states but agricultural pests and diseases could well follow, a Columbia Univeristy researcher says.

Cynthia Rosenzweig told the Association of American Geographers this week that the effects of global warming must be studied in combination, not one at a time.

— Vancouver Sun 1989

WORKSHOP REPORTS

Each of the following chapters begins with a brief introductory summary based on the corresponding background paper(s) prepared for the Symposium. The "Questions for Discussion" prepared for each topic area by the Symposium organizers and included in the Symposium invitation are also reprinted in each chapter.

The proceedings of each workshop have been reorganized and classified for clarity and flow. However, discussion notes and recommendations are presented as recorded by the notetakers and on the workshop flipcharts (spelling and punctuation have been corrected). No attempt was made to alter the content of remarks, and all contradictory statements are included intact.

Where the participant numbers necessitated two workshops on the same topic, proceedings of the discussion have been integrated but the recommendations of each workshop group are presented separately.

PROVINCIAL STRATEGIES
(WORKSHOPS I & II)

THE PROVINCE'S ROLE [1]

British Columbia has neither an overall land use planning strategy nor a resource conservation strategy with which to guide economic development. As a result, we have no rational basis for allocating land to competing uses and no idea of whether we are operating within the carrying capacity of the environment. The 1987 Economic Development Strategy for British Columbia, while expecting a continued reliance on the primary resource industries for the generation of export dollars in B.C., does not consider the possibility of ecological limits to economic growth. The provincial government must assume responsibility for taking full consideration of the social and environmental costs of economic development in B.C.

> "What changes in economic development, resource management, and social policies would be required with a serious commitment to sustainable development? How would planning and management practice be different under sustainable development?"

These questions were foremost in the organizers' minds as background papers were prepared for workshops in all topic areas. Though these fundamental questions are clearly relevant to all workshop topics, they seem particularly germane to "Provincial Strategies". The provincial level of government has a unique and critical role to play in promoting sustainable development — as administrator of the Municipal Act and the Public Schools Act; as a link between the initiatives of national and regional levels of government; as trustee of the 95% of our land base that is Crown owned; as a body of government with the capacity to direct and integrate land use; and as a discrete body of government equipped with appropriate legal tools to independently develop, promote and support provincial sustainable development strategies for long term environmental and community stability.

WORKSHOP DISCUSSION

The following issues and comments were raised during the discussion in the Provincial Strategies Workshops I and II at the Symposium.

As outlined in the World Conservation Strategy, the reasons for integrating resource conservation and economic development are "to maintain essential ecological processess and life-support systems; to preserve genetic diversity; and to ensure the sustainable utilization of species and ecosystems."

— IUCN 1980: 1.7

QUESTIONS FOR DISCUSSION

The following questions were prepared by the Symposium organizers and included in the invitation to the Symposium.

How would sustainable development differ from traditional economic growth?

Is tighter environmental regulation and "environmentally sensitive" development enough, or do we need a fundamental shift in cultural attitudes and values to achieve ecological stability?

Does B.C. and Canada's integration into the world economy (e.g., through multinational corporations and liberalized trade agreements) enhance or inhibit our ability unilaterally to implement sustainable development?

What general principles and specific investment criteria should be reflected in future federal-provincial economic development agreements to ensure the promotion of sustainable development?

➪

SUBSTANTIVE ISSUES

General

Obstacles to Sustainable Development: General Criticisms of Current Approach to Economic Development

Our approach to development is fundamentally flawed. We have "resourcism", we've objectified the environment; currently the environment only has the values that we've attached to it.

If we don't first answer BIG questions (about the assumptions behind capitalism and its relationship to the ailing environment), then we're just spinning our wheels talking about the need for such schemes as a Provincial Land Use Plan.

Limited access to information on economy and environment issues must be changed as a first step towards sustainable development.

Government must recognize the limits of our classical tools of evaluation. For example, the lack of "social cost" information limits the effectiveness and usefulness of microeconomic models.

Short time horizons characteristic of present policy and planning will prevent us from attaining sustainable development.

The concept of sustainability as suggested by the WCED is perhaps not a good management basis for us to begin with; the point was made that we don't have the luxury of time to define sustainability; we must begin action NOW.

Our resource use patterns are not compatible with the earth's carrying capacity. The system will regulate itself regardless; however as we violate the earth's carrying capacity, we just don't know what might fall off the cart as a result of the earth's adaptations (like humans).

Industry is at present taking steps towards implementing the principles of sustainable development. The problem really lies with the differing interpretations of sustainable development, as reflected by the differing opinions around the table in this workshop.

B.C. has a very poor record of Research and Development; Canada is low in the international scene on R&D as well.

There are not enough federal or provincial resources available to implement the WCED Report.

It is unclear at this point how the growing rhetoric about sustainable development in government will be translated into policies and action.

There is simply insufficient political will in B.C. to achieve sustainable development.

Political boundaries really impede decision-making with respect to sustainable resource use.

Attitude Change Issues

The kind of change necessary in our society to achieve sustainable development is cultural transformation.

A new paradigm is needed: economy and environment are not to be traded off; they are linked. Quality of life = quality of environment.

The people and government of B.C. must recognize the principles of sustainability inherent in the relationship that Natives have with the natural world.

A new ethic is needed in the formation of government programs: environmental health should be the foremost priority in all future decisions.

In order to generate the political will needed to get action on sustainable development issues, public awareness and support for sustainable development is critical. How can this support be encouraged and promoted, especially with a lack of complete information, and with the phenomenon of "environmental lag effects" that the public has difficulty grasping.

We who advocate change must recognize that paradigm shifts are threatening to traditional thinking. Must get bureaucrats thinking differently. Using the WCED framework for open dialogue requires political will: information must be solid, grassroots initiatives will grow and generate pressure which will be transformed into political will.

We must recognize the built-in momentum of society is like a tanker in the ocean. The stages that a society goes through in attempts at shifting paradigms were summarized as: forming, storming, norming, performing.

We must talk more about the future we want and imagine; what would it look like?

We cannot assume that individuals are prepared to do with less and compromise in their daily lives; the will of people to commit themselves to what they say is in doubt.

We need more than an intellectual understanding of the problem of environmental degradation; we need an understanding of societal behaviour; how can society's behaviour be predicted with respect to initiatives towards sustainable development?

People will accept change, but the government must have the will and assume the role of implementing change.

Education Issues

Public needs more information on the relationship between economy and environment; will the public perhaps change more easily with full information?

Must make an effort to access whatever information is available, even if this requires changes in "access to information" legislation.

In which potentially sustainable economic sectors do we have a comparative advantage that could be enhanced by provincial policy?

Are special social "safety nets" required to catch workers that might be displaced from industries in the transition to sustainability?

Should we be considering additional policies for wealth redistribution to begin narrowing the gap between rich and poor both within B.C. and internationally?

What kinds of support and regulatory policies for the private sector should be used to promote sustainable development?

How can a provincial conservation strategy be used to promote sustainable economic activities?

In what ways should the education system be improved in support of sustainable development?

Education is the key link in achieving sustainable development, yet B.C. has a fragmented approach to educating its public. There is no cohesion in the system to get the critical information across. We should make better use of the educational resources that are available.

Attention must be paid to what information the public ought to have and what information is needed from the public.

The Ministry of Environment should sponsor educational programs to get necessary information across; venues should include TV, school curricula, environment computer networks (databases and span-systems).

The Ministry of Environment should identify and advertise sustainable development "success stories" in the province; the B.C. government should recognize and promote environmentally friendly goods and services.

There should be greater control over the advertising of unsustainable products/activities. Commercials encourage us to consume more; why not have "sustainable development TV commercials" to counteract this?

Before we can communicate our ideas about sustainable development, we need a message to put forward. Thus we must work on a definition, conditions, description of sustainable development; it is necessary to establish sustainable development criteria; sustainable development will be defined differently from jurisdiction to jurisdiction.

Economic Issues

Obstacles to Sustainable Development: Criticisms of Current Approach to Economic Development

B.C. lacks any real economic policies that could effectively move us towards sustainable development.

We must realize that there is fundamental difference between Sustainable Economic Development and Sustainable Ecological Development.

We need an economic strategy fundamentally different from our current strategy; we must reduce the scale of our development, not expand it.

We need to recognize limits to economic growth and should be prepared to accept a steady-state economy.

We need tools to measure growth in our society other than short term, single sector, economic valuation.

The marketplace must be able to adapt appropriately to changes that will occur. It cannot currently anticipate lag effects characteristic of environmental problems. Our economic system must help us maintain maximum flexibility.

B.C.'s Economic Development Strategy (EDS) states that "British Columbia will continue to be heavily dependent on resource industries to earn foreign exchange and attract foreign investment." The EDS does not mention any limits to economic growth in the resource industries. Yet a recent study by E.A. Sauder states that "there will be no more old-growth timber to log...in 30 years" in most of coastal B.C. (Vancouver Sun, Oct. 6, 1988). The falldown in production accompanied by the switch to second growth timber will be significant.

— MOED 1987, p. 3

Competition in world markets is an obstacle to sustainable development. It is the responsibility of government and non government institutions to make available to the public information about (a) compliance of specific companies with environmental standards, and (b) the effects of trade practices and competition in world markets on environmental integrity so that consumers can make informed choices.

Regardless of the economic strategies we adopt to encourage environmental protection, enforcement of regulations must be increased.

Economic Opportunities in Sustainable Development

We must begin to develop small scale, appropriate technology in B.C.; there are opportunities here for sustainable economic development.

There are tremendous opportunities for work as we move towards sustainable development; unemployment is inexcusable. However, along with job opportunities, there will be job displacements to anticipate and contend with.

Roles for Government Economic Policy in Promoting Sustainable Development

We should explore how the market can be used to produce solutions to environmental degradation in our mixed economy (e.g., internalize external costs such as pollution; apply environmental taxes).

Consumption patterns must be transformed. Government pricing policies could greatly influence the development of alternative, environmentally sound goods and services; financial incentives could encourage industries to adjust and adpapt. Government has a role to play in promoting sustainable development in all aspects of the B.C. economy. It should set an example itself and adopt a policy of procuring only environmentally friendly goods and services.

We must look at our approach to generating employment through massive public investment. This money could be better spent supporting local, smaller scale sustainable projects.

We must address the power of multinationals and their effects on the mobility of capital.

We must recognize that multinationals and larger companies may be the only ones in a position to take the environment into consideration; smaller companies would have a tough time dealing with costs and transitions.

The B.C. government should require that a greater proportion of profits from resource use go to economic rents. Here a point was made that we must be careful not to take out or stifle wealth creators or we will have no wealth to redistribute.

Large firms are capital intensive and thus have comparatively high fixed costs which contribute to price/wage rigidities and thus low adaptability to changing market conditions. "This is turn leads to difficulties such as prolonged work stoppages and high unemployment" (MOED 1987, Appendix A). This is demonstrated by the closing of the B.C. Forest Products mill at Boston Bar in the early 1980's while Lytton Lumber, a smaller more labour-intensive local mill, continued to operate profitably (M'Gonigle 1986) .

The B.C. government should focus on economic development programs that are consistent with sustainable development and provide incentives for such activities.

International trade agreements could have requirements to adhere to pollution standards as a way to achieve international environmental standards.

B.C. must evaluate the development of small scale technologies as a step in developing a sustainable development strategy; a limited number of substantial cash stipends should be provided to companies that develop patents for products that promote sustainable development.

Ethical/Moral Issues

What is required for sustainable development to be achieved worldwide is ethical change; equity and social justice are integral to sustainable development. We must consider ways to consider these issues regionally as well as globally.

Poverty is an obstacle to sustainable development; our governments must address the growing poverty gap both here and worldwide; we must address the impacts of our present and future development on the Third World.

We must reevaluate the meaning of wealth; we as a society must distinguish between wants and needs; we in the developed world must lower our standards of living and become more aligned with developing nations (as opposed to encouraging economic growth in the Third World).

As stated in *Our Common Future* (pp. 114-116) all nations must protect unique qualities and aspects within their society and act to preserve cultural diversity; B.C. must pay serious attention to Native concerns. Native issues represent opportunities for us all, not constraints.

Human rights issues must be inventoried along with environmental factors in the development of a B.C. "sustainable development strategy".

The government must take a stronger role in ensuring fair distribution of the "resource pie" (and the dollars generated from the extraction and use of these resources).

PROCEDURAL ISSUES

General Procedural Issues

Round tables will not be the only answer to environmental problems in B.C., but will be an important step. The approach reflects the difference between the "old" environmentalism and the "new" environmentalism - cooperation is replacing regulation. We must keep working to break down conflictual ideological barriers.

We must address the global context in which we exist. How can we address global warming and ozone layer depletion in B.C. in a way that complements national and international initiatives? We must decide on how to include global issues as factors in local and provincial development strategies.

Local initiatives to address global issues could be guided and facilitated through an overall plan such as a "B.C. Conservation Strategy".

We need more intense, efficient management of resources in B.C.; must direct land use to needs, not wants (need demand management).

In order to achieve sustainable development in B.C. and to promote sustainable development worldwide, there must be greater interjurisdictional collaboration in economic decision making.

To achieve environment/economy integration, the B.C. government must look at demand management, not just supply management.

Local Level, NGO Initiatives

Politics is a continuum comprised of environmental groups right up to formal party politics; we must remember that local initiatives are legitimate and important to the process of change.

Economic development should be community based; this level of development is most consistent with sustainable development goals and principles.

To achieve sustainable development, we must undertake an iterative approach; the focus must be global awareness with small scale examples of sustainable development.

Intervenor funding is necessary for NGO's to gather the information they need to make informed decisions and to lobby the government effectively.

The round table approach is cooptive and only a tool for government; round tables never have adequate representation from grass roots level or Native interests.

We should assist the integration of environmental groups and their intiatives to counter the integrated multinational corporation scene; there is a power disparity: it is far easier for corporations to make themselves heard.

Time Frame Issues

Change must take place at two scales: 1) long range fundamental change and 2) immediate urgent actions.

We need a sense of "time frame" as we discuss sustainable development in B.C.; do we need a leap of faith? Slow change or fast change?

Uncertainty and Decision-Making

Uncertainty is a very important element in decision making now; uncertainty has always been there but more important now as rate of change seems to be accelerating.

The nature of information we are collecting is changing; are our tools still appropriate?

Our tools for analysing information have likely never worked very well, but in the past, the environment absorbed the impacts of our poor decisions. The environment was more flexible in those days; we've pushed it too far, so the quality of our decisions is now more critical.

INSTITUTIONAL ISSUES

Provincial Programs and Strategies

The current land use scheme in B.C. is neither coordinated nor integrated; there are no specific objectives. Significant change is needed in land use planning. We need institutions that are far more flexible in order to deal with change over time.

Structural readjustment is not needed in B.C. as appropriate mechanisms are already in place; we just need a longer planning horizon. Ad hoc land use planning scheme works well in B.C.

The marketplace is not the best forum for determining the best use of land; a provincial land use strategy is thus needed as part of a provincial "sustainable development strategy" to intervene effectively in the marketplace.

B.C. needs an umbrella concept for planning for sustainable development: a "Provincial Sustainable Development Strategy" as opposed to a Conservation Strategy; we must link the Strategy with national and global issues, plans, initiatives.

Land use planning must be an aspect of the "sustainable development strategy"; it must be more than a technical zoning function.

Public participation is required in creating terms of reference for developing a Conservation Strategy in B.C.

A Conservation Strategy alone is not enough to represent Native interests and environmental groups at the regional level.

B.C. Ministry of Environment should publish an annual State of the Environment report (like a report card), to include:

1) explicit holes and gaps in data and information;

2) progress made towards specific sustainable development objectives; and

3) attitudinal information about the public's perception and commitment to economy/environment integration; and evaluation of public acceptance of sustainable development principles.

According to the Association of B.C. Professional Foresters, the current sectoral approach to resource management in B.C. is recognized as one of the important causes of land use conflicts. It also results "in an issue-by-issue approach to land allocation and reallocation, rather than an overall systems approach."

— ABCPF 1988, p. 6

B.C. needs integrated resource management to avoid and resolve conflict; we need comprehensive planning with sustainable development as underpinnings.

The B.C. government should continue to use ELUC as a useful communication forum that serves to promote integrated resource management.

Canada should establish an Environmental Bill of Rights.

Decentralization/Regionalization

Can our exisiting political system be tailored to allow us to reach sustainable development or do we need fundamental restructuring? Perhaps civil disobedience is the only route to sustainable development given our exisiting political system.

Structural readjustment is necessary to put environmental issues where they belong in economic development strategies, to give communities legitimate local control over economic development, and to incorporate a new set of development principles.

True decentralization and regionalization (empowerment of regions and communities) is necessary to achieve sustainable development. As long as local decision making is not legitimized, sustainable development will not be realized. It's very related to who's calling the shots. Government must be effectively decentralized.

Will local decision-making necessarily be more environmentally benign?

Our political system doesn't allow the public voice to be fully heard; B.C. and Canada should look at the US system where citizens can effectively get issues put on ballots.

Specific Institutional Suggestions

As a matter of principle, a Freedom of Information Act should be legislated to include public and private information; this is necessary for making informed decisions and taking appropriate action towards environmental protection (there was a question about how this fits into a discussion of sustainable development; comments were made that this would be too problematic). Along these lines, a comment was made that environmental groups should be held accountable for their comments.

The WCED recommends that all nations set aside and preserve more wilderness; B.C. must set aside much more land as wilderness reserves. To achieve sustainable development in B.C., we must increase wilderness preservation 5-13%; must decrease annual allowable cuts. Multiple values/multiple uses must be considered as we evaluate wilderness. We must be aware that CCREM Report and WCED Report differ with respect to "wilderness" and its role and importance.

Current Environmental Impact Assessment is criticized for its infrequent use, reactive nature, institutional frailty, and political indifference. It also makes little or no contribution to cumulative effects assessment and the determination of regional carrying capacity. In effect, current procedures are generally biased toward the project and development.

— Rees 1988

Mismanagement of Tree Farm Licences should be investigated by an independent body such as an Ombudsman.

We should look to establishing limits to resource utilization; e.g., zero tolerance for release of toxic materials; establish areas that are to remain totally unmanaged (not regarded as a resource; areas with complete protection to maintain genetic diversity).

We need sufficient measures to reduce fossil fuel use to address urgency of CO_2 and climate change issues; for example, increase fossil fuel use tax 2% per year for 25 years (while addressing the inequities that may result from the above).

Environmental review must be incorporated into the earliest stages of development planning and decision making so that environmental concerns are considered at the outset, not merely in reaction to development decisions of completed projects.

We should set specific goals to ensure environmental protection including shifting the burden of proof in economic development with respect to threats to the environment: i.e., "guilty until proven innocent".

PROVINCIAL STRATEGIES 1

WORKSHOP RECOMMENDATIONS

As apparent from the above, the discussion during the workshop was substantive. While many different issues were addressed, not all could be covered in the conclusions that follow.

The purpose of this statement is to present the main findings of the workshop session. Two results are presented: one is a conclusion on the subject of political will; the other is a model for sustainable development.

Political Will is:

- absolutely necessary for sustainable development
- cannot be effective without public support
- public support requires a change in values and attitudes
    1. redefinition of wealth and needs
- therefore, public awareness must be increased
    1. education
- increased public awareness requires a commitment from Government
- therefore, the Government must show leadership (political will)

Model for Sustainable Development

The model presented here reflects the current organizational structure of Government, with some important changes.

Sustainable Development Strategy (The Destination)

- conceptual level providing the goals and objectives of development

Land Use Planning (Map)

- a dynamic process
- decentralized to the regional level
- information —> rules/guidelines
  1. data
  2. resource inventory
  3. options

Sectoral Components (Vehicle)

- forestry, agriculture, mining, energy, etc.
- resource managers
- provide input at all stages of development

Stakeholders (Drivers)

- all affected interests
- provide input at all stages of development

Feedback Mechanism (Fuel gauge)

- monitoring and assessment
- planning/management tool

PROVINCIAL STRATEGIES 2

WORKSHOP RECOMMENDATIONS

Themes addressed were:

- Information
- Decision Making
- Economic System
- Ethics, Morals, and Attitudes

Information

• There should be an annual provincial report on the state of the environment which includes not only existing information but which elucidates information still needed or not available. It should also include progress made towards specific sustainable development objectives. Adequate funding should be provided by the province for collecting biophysical and socio-economic data, and for preparing the provincial report.

• The province should give greater attention to public attitudes and behaviour relating to SD for policy making purposes, and should conduct formal studies into public attitudes and perception of sustainable development.

• The province should undertake a public information campaign on sustainable development issues using avenues including school curricula and all forms of media.

Decision Making

• A provincial conservation strategy is necessary. Broad public participation in the development of the Strategy in required.

- Decentralization of decision making is required in the province to facilitate sustainable development; this must be done within the framework of a provincial conservation strategy.

- Environmental review must be incorporated into the earliest stages of development planning and decision making so that environmental concerns are considered at the outset, not merely in reaction to development decisions or completed projects.

- Baseline "sustainable development" indicators must be established to help monitor progress made towards sustainable development. A progress report would be included in the annual provincial report on the state of the environment.

Economic System

- B.C must develop a plan to reduce fossil fuel consumption by:

1) increasing fuel tax: goal 2%/yr for 25 years
2) introducing a progressive income tax scheme to counter the inequities that may be created by the above:
    a) increasing public transportation
    b) removing direct and indirect subsidies of hydrocarbon exploration and development.

- Greater inter-jurisdictional collaboration in economic policy making must be encouraged, through economic agreements and incentives, etc.

- There must be greater coordination of economic incentives and regulatory controls in waste management.

- B.C. should explicitly examine the roles and impacts of multinationals and megaprojects in any strategy to achieve sustainable development.

- Government economic development programs and development incentives must be consistent with sustainable development principles.

- The B.C. government should identify sustainable development "success stories", and establish a network that would make details of these examples readily available to the public, industry, and all levels of government.

- Small scale technologies developed in B.C. should be evaluated for their contribution to sustainable development.

- B.C. should award a limited number of substantial stipends annually for patents developed in BC that promote sustainable development.

Ethics, Values and Attitudes

- The B.C government should undertake an awareness raising campaign, recognizing that public attitude will be a critical factor in achieving sustainable development.

- Underlying ethics of government programs should be a healthy environment as #1 priority

- The B.C. government should support the identification of environmentally safe goods and services for consumers.

- The B.C. government should recognize the spiritual and aesthetic values of wilderness.

- The B.C. government should make it and adminstrative policy to purchase only environmentally safe products.

The following points were discussed in the workshop but did not receive consensus:

- A Freedom of Information Act should be legislated to ensure all information regarding sustainable development issues is available to the public.
- The classical tools used to evaluate the state of our economy and our resources should be re-evluated. (note: some participants felt this is already occurring).
- A zero tolerance of toxic materials should be established in B.C.
- Wildlife preservation areas should be established which will remain unmanaged and not viewed as a resource.
- The mis-management of tree farm licences should be investigated.
- Environmental groups should be held accountable for their statements.

ENDNOTE

1. This introductory summary is based on Nowlan and Djoekardi 1988.

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ECONOMIC OPPORTUNITIES IN SUSTAINABLE DEVELOPMENT

Sustainable development provides society with the chance to restructure our economy in a way that will provide new opportunities and an improved quality of life. Sustainable development requires a change in the nature of economic growth towards development that is less material and energy intensive, more equitable in its distribution and which places more emphasis on human potential. Rather than assuming that the only way to protect the environment is to stop all economic activity, this workshop explored ways in which new economic activities could be developed and encouraged which are both environmentally and socially sustainable. The workshop included representatives from industry, a sector whose support is required for the success of sustainable development initiatives.

"The outlook is for what we may call 'convulsive change' - change forced upon us by external events rather than be conscious choice, by catastrophe rather than by calculation. As with Malthus's much derided but all too prescient forecasts, nature will provide the checks, if foresight and morality do not."

— Heilbroner 1975

REORIENTING ECONOMIC ACTIVITY [1]

Mainstream technologies are leading to world-wide environmental problems because these technologies are energy inefficient, wasteful of renewable and non-renewable resources, and are violent towards the biosphere. These forms of technology are problematic because they are being transferred to developing countries and supplanting more ecologically appropriate technology. In the rush to attain permanent economic growth, the subsidized use of destructive technology has been promoted to the detriment of research and development in sustainable technologies.

"What is clear is that a way of life that bases itself on materialism, i.e., on permanent limitless expansionism in a finite biosphere, cannot last long, and that its life expectation is shorter the more successfully it pursues its expansionist objectives."

— Schumacher 1973

The shift to sustainable technologies must be all-encompassing to be effective. Sustainable technology is characterized as small scale, simple, both capital and energy saving, decentralized, renewable and environmentally benign (Schumacher 1973; McRobie 1981; and Dickson 1976).

Some technologies only appear to be sustainable but are really an intermediate step, such as car pooling and biodegradable plastic bags. Other technologies substitute one problem for another (e.g., styrofoam products without chloroflurocarbons are still not biodegradable).

Canada only spends 1.38% of its GDP on research and development as compared to 2.2% - 2.7% in most other industrialized countries. However, with increased research and development in the area of sustainable technologies, Canada has the potential to become a world leader. Possible ways to encourage research and development in sustainable technologies include:

- Environmental mutual funds: A high profile fund of environmentally progressive companies. Companies would recieve exposure and influx of funds.

- Tax free environmental bonds: Issued to raise money for construction, renovation or improvement of infrastructure essential to a healthy environment.

- Environmental flow-through shares: Partnerships that invest in companies exceeding environmental standards. Companies would obtain capital at a discount and society would benefit from greater corporate sensitivity.

- Environmental venture capital funds: Would finance businesses contributing to environmental improvement.

- Changes to pension legislation: Government change of pension legislation to allow greater flows to environmentally beneficial investment vehicles or businesses.

- Emergency environmental fund: Financed by a one time levy on corporate profits or an individual surtax. The fund would be used to clean up environmental disasters with the costs being charged back to the polluters (Cassils and Tatrallyay 1988).

Also, emphasis is needed on education to encourage people to do more research and provide a framework for coping with impending changes in society.

Criteria For Sustainable Economic Development

The following criteria for sustainable economic development were drawn from the literature to form some basis for assessing the suitability of current and future economic development in B.C.:

> "In 1985, private enterprise spent only $35 million dollars on renewable energy research and development but $257 million on fossil fuel research and development."
>
> — Statistics Canada 1988

Substantive criteria

Sustainable development should:

- Meet essential human needs.
- Stabilize the world's population.
- Enhance the resource base.

Process criteria

- Integrate environment and economics in decision-making.
- Manage risk and reorient technology.
- Transform quantitative growth into qualitative growth.

Identification of Specific Economic Opportunities

Specific economic opportunities were identified in the following sectors:

- energy efficient technologies;
- recycling technologies;
- detoxifying the environment;
- high technology opportunities; and
- tourism.

Identification of Obstacles to Achieving Sustainable Economic Development

Some of the obstacles to achieving sustainable economic development include:

- insufficient funding for research and development into sustainable technologies;
- inadequate information about economic choices which are sustainable;
- current low oil prices and government subsidization policies that inhibit the development of energy efficient technologies;
- limited economic incentives for consumers to recycle;
- new social support systems will be needed where recycling takes economic subsistence from the poor;
- high cost of developing new technology; and
- potential negative impacts of some activities (e.g., tourism creates poor paying jobs and is to some extent energy dependent).

WORKSHOP DISCUSSION

The following issues and constraints relating to economic opportunities in sustainable development were discussed during the workshop. The issues have been classified as being substantive, procedural or institutional. Discussion around specific topic areas have been identified by the following subheadings: international perspectives, communication and education, economics, and technology.

Substantive issues

General issues

The current definition of sustainable development is not clear enough for corporations to take action. A true definition of environmentally sound industries is needed to give direction to our efforts.

We need to address the spiritual implications of sustainable development by recognizing that the earth is our biosphere.

The business sector must be convinced of the benefits of sustainable development and the need to become actively involved in the transition to ensure its success.

Solutions for sustainable development must be equitable. They must recognize the effect on people who are poor, even in this country.

Sustainable development will require both personal responsibility and government leadership to create change.

We will need better measures of environmental quality and energy use to determine what activities are sustainable.

We must identify the actions that are needed now for damage control.

Constraints

Some interest groups have not defined their interests in terms of global priorities.

Uncertainty respecting the nature and extent of environmental change inhibits action.

An apparent lack of commitment by the public.

QUESTIONS FOR DISCUSSION

The following questions were prepared by the Symposium organizers and included in the invitation to the Symposium.

What are the general characteristics of sustainable technology?

What principles and guidelines for investment should be adopted by the Department of Western Economic Diversification to ensure that its activities support sustainable development?

By focussing on increasing energy supply rather than reducing demand, is Canada missing an opportunity to become a world leader in the development and production of marketable energy-efficient technologies and products?

Can an unregulated free market provide the incentives today to research the sustainable technologies that will be needed in the indefinite future? (It may take 25 years from concept to implementation of a new technology or marketing a product.)

What are the appropriate roles of government and the private sector in promoting long-term research and development of appropriate technology and products?

What economic sectors (e.g., energy, forestry, transportation, resource recycling, waste management) would be most responsive to sustainability-oriented research and development in B.C.?

What employment opportunities would be provided by these research, development, and production activities?

The lack of knowledge on how natural systems really work. Environmental issues are extremely complex.

Society has a cultural bias towards logic, empiricism and quantitative measures.

The credibility of both the issue and some of the messengers are questionable.

The time constraints to accomplish and demonstrate sustainable development are unknown.

International perspectives

The behaviour of all countries must be co-ordinated to shift the world-wide economy to sustainable development.

Mechanisms must be found to co-ordinate the international transfer of funds/resources to encourage global sustainability.

Constraint

International competition in the market constrains national action on sustainable development.

Communication and Education issues

Media and educational institutions need to establish a general awareness of what needs to be done (including an emphasis on the need for attitude change), how it should be done, and what options are available.

We need to define the problem in market terms (e.g. oil crisis effects in the 1970s).

A marketing campaign could be used to gain support for sustainable development.

Constraints

Getting people (especially politicians) to "sign on".

Fear of losing a privileged position inhibits change.

There are misconceptions about the real cost of the problem.

Information overload.

Resistance to change.

Lack of a common language for environmentalists and corporate leaders.

Economic issues

The cost of externalities must be included in economic decision making (i.e., try to value environmental costs) in addition to recognizing that quantitative measures are not the only important elements in decision making.

The trade-offs between the environment and economy must be made more explicit before decisions are taken.

Development does not necessarily mean material growth.

Learning to work within the biophysical limits does not necessarily mean there are limits to the growth of human potential. Economic opportunities that are qualitative in nature can still represent growth.

"The challenge is this: if we accept that the pollution issues are life-threatening (and the scientific evidence is disturbingly corroborative), how does one get around the problem that there is no visible end to the supply of hydrocarbons? In fact, were it not for artificial price-fixing, the cost of hydrocarbons would be even less than it is now."

— *Michael J. Brown, symposium participant*

Material growth is possible but only in certain economic sectors (i.e., those that are energy and material efficient). Society must be involved in determining those sectors.

Economic mechanisms which could be used to alter consumer behaviour include the use of tax related incentives and disincentives, and the identification of environmentally safe products. The best use for products must be identified potentially eliminating harmful products that are used only for non-essential purposes.

Reference points for progress toward sustainable development should be identified to maintain public support (i.e., set milestones, specific objectives, and targets that indicate progress toward ecological stability).

Constraints

We can't shift from a market-based economy.

The cost of implementing changes.

Technological issues

Scientific personnel must be trained to take advantage of new technologies.

Private industry is a major source of innovation. However, it cannot accept all the risk of developing new technologies. Government subsidies will be required to encourage communication and commercialization of sustainable technologies.

Enabling technologies or substitutes must be made available.

Constraint

Inadequate funding for communication and technology transfer.

Procedural Issues

A collective approach (i.e., integrated action by industry, government, the public) is required to manage change toward sustainable development and to deal with the risk and uncertainty in decision making.

The integration of economic and environment considerations in political decision making is essential.

Integrated planning for funding of research, innovations and demonstration projects should be established including the creation of a library of success stories.

Environmental impact assessments must be prepared early in the decision making process to deal with alternatives rather than just seeking to minimize pollution and other environmental damage.

Constraints

Insufficient access to information.

Limited amount of timely and effective feedback.

Inappropriate spending priorities (e.g., military).

Current emphasis on privatization, competitive relationships and deregulation may inhibit cooperative enterprises.

> "Potentially polluting or recyclable material is often not taxed at the time of original production, a strategy which could be used specifically to provide a tax revenue which would supply funds for recycling and clean-up."
>
> — L. Brown 1988

> "Many argue that research and development in Canada is limited by the size of the market, yet Sweden, a country of much lower population, has outpaced Canada in developing and trading in high technology. Others argue that Canada lacks the financial resources but more research and development does not necessarily mean higher prices and taxes. Financial support could simply be redirected from military research or from subsidies given to non-renewable resource development."
>
> — J. Barrons 1988

Institutional Issues

Activities for sustainable development must be pulled together in an integrated manner at an appropriate spatial scale (this may be at the local, regional or national level).

An Environmental Board similar to a Treasury Board is needed.

Constraints

Inertia in our present institutional structures (economic, political, social, and industrial).

A sectoral approach to environmental management.

Decision making time frames are short term but problems require long term solutions.

WORKSHOP RECOMMENDATIONS

Research and Development

- Centres of Excellence Programs should be established to develop environmentally benign technologies and industries.
- Incorporate sustainable development principles in the Western Economic Diversification and Industrial and Regional Development Assistance (IRDA) policies and programs.
- Offices should be established at provincial universities to promote and assist in the research and commercialization of sustainable technologies and to demonstrate the feasibility of these new technologies.

Priorities and Decision-Making

- The federal government should establish an Environmental Board with power equal to the Treasury Board.
- B.C. and Canada should remove direct and indirect subsidies to hydrocarbon exploration, and reorient research and development priorities and subsidies to environmentally sound energy sources and technologies.

Education and Awareness

- The federal government should establish a Royal Commission on the Environment and Economy in Canada to increase public awareness of these issues.
- The provincial government should fund the development of school curricula at the primary and secondary levels to educate future generations about sustainable development.

Models

- Incentives should be provided to business and individuals to develop working, practical examples of what can be done (i.e., Sustainable Development Demonstration Projects).

Implementation

- Risk management: The research efforts of the private sector should be rewarded to reduce the financial risk to innovators. A program to reduce risk to first users of new products should be established.

put your waste
on a diet
RECYCLE

- A set of criteria should be developed to measure government and industry compliance with a sustainable development strategy.
- Laws in B.C. and Canada should be changed to allow civil suits against pollution violators.

Co-operation

- Partnerships and bridges should be built between those interested in preserving the environment and those interested in the use of the environment. Interagency co-ordination should also be improved.
- The provincial government should initiate meetings with industry leaders to discuss sustainable development within the context of a business plan.
- A funds matching program should be established for venture capital firms involved in environmental projects.

ENDNOTE

1 The introductory material for this chapter is derived from Barrons 1988 and Mattix 1988.

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PLANNING SUSTAINABLE COMMUNITIES

It is evident from the continued trend toward urbanization throughout the world that settlement patterns have a tremendous impact on regional ecosystems. Therefore any attempt to achieve sustainable development will need to include a component relating specifically to changes in urban regions.

It is also clear that a successful shift to sustainable development will require a significant change in people's attitudes. This includes a re-evaluation of humanity's place in the world and a redefinition of what constitutes basic human needs. Focussing on change at the community level provides the best opportunity to have a direct impact on individuals and potentially influence their lifestyle.

WHAT MAKES A COMMUNITY SUSTAINABLE?

Defining Sustainable Development at the Community Level

Sustainable community development is defined as development which guarantees the future of the community. It creates a community that is healthy and caring, one that is socially and environmentally stable. It emphasizes the potential of human intelligence and creativity to find ways of meeting the long term economic and social objectives of the community within the constraints imposed by the biophysical environment and the demands of human decency.

The Need For and Characteristics of New Institutions in a Sustainable Community

The magnitude of change that is implied by a shift to sustainable development indicates that many current institutions may be incapable of adapting. In addition, any new institutions will need to be designed to reflect the structural changes required by sustainable development. Some of the characteristics required by institutions to address issues of survival and to ensure that the long term interests of the community predominate include:

- integrated planning processes designed to identify environmental constraints and able to deal with multiple goals;
- decision making institutions that are adaptive, i.e., designed to respond immediately to unexpected impacts on the biophysical and social environment;
- institutions that are open to community involvement in decision making, implementing, and monitoring community development; and

> "One of the principles of a Planned Sustainable community is to work with nature rather than against it. Working in conjunction with Nature requires strict adherence to the use of common sense. The principle of a balanced ecology is most important so that the environment around a Planned Sustainable Community can be healthy and productive, and so it can provide a quality of life that can be enjoyed by all its inhabitants."
>
> — *Earl J. Smith, Nuu-Chah-Nulth, symposium participant*

- institutions that provide reasonable local control over community development, within a co-ordinating framework of provincial, national and international institutions.

Empowerment at the Community Level

Communities have become increasingly involved socially, economically and environmentally in the global community, yet their powers to cope with this involvement have declined. Policies on international trade, unemployment, environmental degradation (including resource depletion) are dealt with at the provincial or federal level, with little or no local input, despite the fact that the immediate effects are felt at the local level. On the other hand, communities have yet to use fully the powers available to them through such avenues as revenue generation, import substitution, community planning, and control over air and water quality.

Importance of Planning at the Local Level

Sustainable community planning is a process to create positive social change at the community level, by defining the needs and aspirations of the community, creating a common sustainable vision for the future, designing, implementing and monitoring a strategy to achieve that vision.

> People must develop a vision of the future which will challenge them to be active and creative... People need to learn they have the potential to change their future.
>
> — Theobold 1987

A sustainable community plan would address complex problems including global environmental trends, food security through land use planning, and poverty, in order to integrate all human activity within environmental constraints. This process should begin with the identification of community needs, community assets (natural, physical and human), and the social and environmental problems the community hopes to solve. The first step in implementing a sustainable community plan would be to identify and integrate all the ecological and social restrictions assessed as critical to sustainable development into the Official Community Plan. Zoning, development permits, and property tax schemes would then be brought into line with the plan.

Some general guidelines for sustainable development at the community level include the following.

- Favour development that improves the quality of people's lives rather than the quantity of material goods produced.
- Integrate urban infrastructure and land uses into local ecological processes (such as nutrient cycles and airshed patterns), so that they do not exceed the ecological limits of the bioregion.
- Promote regional self-sufficiency and self-reliance in energy, agricultural produce, and other goods and services derived from ecological resources, while encouraging the importation of only those goods that are produced in a sustainable manner. This will enhance regional economic diversity, and reduce the impact of transportation corridors on the environment.
- Enhance land use efficiency to consolidate urban form, thereby reducing the need for transportation (especially the use of private cars).
- Reduce urban/rural conflicts and interference with agriculture by 'hardening' the urban fringe.

Identifying Problem Areas and Recommending Specific Solutions

Air quality in some urban regions (e.g., Los Angeles, Mexico City) is becoming so severe that urban dwellers are suffering from respiratory ailments and other health disorders. In addition, cities are primary producers of greenhouse gases. Specific steps that can be taken by municipalities to address these issues include:

- Limit the use of private cars powered by fossil fuels in downtown areas while subsidizing public transportation with funds raised through fuel taxes and licence fees (e.g., based on engine size).
- Monitor the local implementation of controls on production and use of chlorofluorocarbons (CFCs) that are already being advocated at the international, national and provincial levels (i.e., the recent announcements by the Canadian and Ontario governments, and the agreement among European countries to control ozone depleting substances).

Waste disposal is a severe problem throughout the industrialized world. With suitable sites for landfills becoming increasingly scarce, cities must find alternatives to dealing with the many types of waste they create. Such alternatives should include:

- mandatory recycling of municipal garbage;
- improving treatment of municipal sewage to ensure toxins are removed and nutrients are returned to agricultural areas;
- levying substantial fees on industries producing toxic waste, making it more economical for them to recycle their waste than dispose of it;
- using Section 983 of the British Columbia Municipal Act (Development Cost Recovery) to ensure that sufficient funds are raised to cover the costs of integrated sewage treatment facilities which are adequate for maintaining a clean and healthy community environment.

More than 50% of the best quality farmland in Canada lies within 160 km of the major urban regions. As these centres continue to expand, much of this land is converted. The 1988 drought in the United States, Canada, and China was an illustration that relying on distant sources of food can be a risky business. To reduce this risk cities should:

- promote the use of urban gardens;
- preserve the remaining Class 1-3 farmland for food production by instituting strict controls on development at the urban fringe and/or increasing municipal taxes on undeveloped land within city boundaries to encourage infill development.

WORKSHOP DISCUSSION

The following summarizes the discussion that took place in the two Sustainable Communities workshops at the Planning for Sustainable Development symposium. From the range of ideas discussed, it was clear that many participants were willing to advocate significant change at the community level to meet the needs of the planet. The discussion has been categorized according to the type of issue (substantive, procedural or institutional) and general themes that seemed to emerge including attitude change and economic and ecological issues.

QUESTIONS FOR DISCUSSION

The following questions were prepared by the Symposium organizers and included in the invitation to the Symposium.

What is the appropriate spatial scale to implement sustainable development? Can local communities and regional governments implement sustainable development policies without the appropriate policy framework at the provincial, national, and international level?

What planning principles and criteria are required to ensure that urban areas are more fully integrated into, and reflect the capacity of, regional ecosystems?

How can provincial development strategies be made to recognize the ecological and social opportunities and constraints?

Should we be considering implementing such concepts as regional "carrying capacity" and "limits to growth", based on specific environmental quality objectives?

What is the role of B.C.'s new economic development regions in promoting sustainable development at the regional and community level?

How can local institutions be modified and empowered to encourage sustainable development? Can the local planning process be improved to promote community involvement?

What special powers at the community level are required to ensure economically and ecologically efficient land and resource use (e.g., consolidation of the urban core, reduction of sprawl)?

Should regional and community authorities be given greater control over resource development to ensure that it meets local needs and global responsibilities?

Substantive Issues

General Issues

The political system is easier to change than the current economic system which defines ecology as uneconomical.

Sustainable development, as it is currently understood by the World Commission on Environment and Development and the National Task Force on Environment and Economy does not reflect the need for structural change. The ecodevelopment concept is more consistent with the idea of change from the grassroots.

It is essential that we to keep the global context of environmental and social problems in mind when suggesting changes in BC.

> **"Values are the key to the evolution of a sustainable society not only because they influence behaviour but also because they determine society's priorities and thus its ability to survive."**
>
> **— Brown 1982, p. 349**

Attitude Change

Are we reaching for an ideal rather than dealing with reality?

Solutions to environment and development problems require that peoples' attitudes change (i.e., a paradigm shift).

There is a need for a new philosophy as opposed to merely creating better technology.

We do not seem to be prepared to accept the solutions we know are needed now, therefore how can we bring about the kind of change necessary for survival?

To achieve a sustainable carrying capacity, the average person must accept a lower standard of living (as it is now defined, i.e. material wealth) although this will create a higher quality of life.

Environmental concern is a spin-off of affluence, a luxury afforded by good economic conditions.

Media and education - How can we develop a sense of urgency?

- Educate public leaders.
- Raising public awareness will require financial resources.
- The power of the media must be used to change the message of consumption to conservation.

Urban populations tend to be unaware of the extent of human impact on the environment. Individuals must begin to recognize the degree to which their actions are responsible for environmental and social problems.

> **"It is my belief that some of the seeds of sustainable development in Canada lie within the indigenous culture and society, just as the seeds of important strains of agricultural plants have been preserved in their native areas by the peoples living there."**
>
> — *Richard Overstall, symposium participant*

A new language must be developed to reflect new perspectives and alternatives.

The exploration of alternatives should begin with Native practices which reflect sustainable development principles. We should also listen to the voice of women.

Sustainable development should be presented as an opportunity by stressing the positive aspects of change through communication and education.

Economic Issues

What is the nature of new economic growth under sustainable development? Do we want growth? What kind?

There is a contradiction between environmental sustainability and economic growth which can only be resolved with full cost accounting. We need to estimate the costs/benefits of non-economic factors in decision making.

We may already be beyond an ecologically sustainable level of economic production and consumption.

The current level economic growth cannot be maintained given the nature of that growth (i.e., it is material and energy intensive).

Truly sustainable development will require shifting the global economy from eroding the world's ecological capital to living off the interest. The BC economy must shift from forestry dependence to other activities such as tourism.

A rational approach to community economic development is required.

Redistribution of wealth is a necessity; poverty must be dealt with first in addition to maintaining employment.

We must redefine what we really need (i.e., what is enough?).

Ecological Issues

How can we make communities ecologically sane?

Quality of life in communities must be related to some level of carrying capacity.

Healthy public policies must be based on an ecological approach to health.

The differences between regions demand that solutions for sustainable development be different.

The relationship between urban and rural areas must be better understood including the impact of introducing change in rural settings.

Developing sustainable hinterland communities is contingent on the regional control of resources.

Is there a sustainable level of use in non-renewable extractive industries?

Other

Technology - sustainable development will require the development of environmentally benign (appropriate) technology.

Corporate power - need to diffuse the clout of multinationals since it is difficult for communities to affect decision making by foreign conglomerates. There is a lack of environmentally sensitive input in corporate decision making.

Waste Management - recycling should be made mandatory.

Transportation - the role of the car must be reevaluated; measures must be taken to reduce the need for transportation in cities.

Procedural Issues

The complexity of urban issues requires a systemic (or holistic) approach to developing solutions.

The concepts of sustainable development must be translated to mechanisms at the local level including a process to define the problems and prioritize issues, an ecologically rational land development process, long range integrated community planning

> "Two of the most obstinate obstacles to genuinely sustainable development are poverty and wealth. Poverty afflicts at least a quarter and, to a large extent, nearly half of the 5 billion people on earth. More than 450 million are starving. Poverty is unnecessary and therefore inexcusable."
>
> — *Walt Taylor, symposium participant*

(dealing with environmental, social and economic issues), and the use of an environmental and social checklist for planners to assess proposals.

A bioregional approach to governance and development would emphasize self-reliance and developing a 'sense of place' in the community.

It is time to get 'beyond war' and mere 'lip service' to the need for change and begin putting ideas into action.

Effective change could be achieved by identifying high-leverage intervention points.

Seeking community consensus will require that we listen to other points of view.

Political control and political will is required to make sustainable development a reality.

New ways must be found to connect with people in other areas to break down the barriers to joint action.

We must identify who "we" are that will redistribute the resources.

Institutional Issues

Do we want revolution and/or incremental change? How do we implement changes when there are so many problems?

Institutional change and power shifts are required to circumvent the existing power structure. Non-governmental organizations (NGOs) generally set the agenda for change.

Centralization of resource allocation and management decisions, compartmentalization of bureaucracy, and jurisdictional complexities from three levels of government make sustainable development difficult to achieve.

Current institutions lack an holistic approach to urban problems.

Democracy and public participation are essential elements to sustainable development; this includes greater public input into corporate and government decision making.

The spatial scale of environmental problems should be related to the institution that must deal with it.

The round tables as set up by existing institutions may be a form of co-optation.

The BC Municipal Act should be reexamined.

Local responsibility and authority is presently very fragmented. There is no organization or structure at the local level to systematically and consistently implement sustainable development.

Sovereignty should emanate from the roots up. Local stewardship of resources also implies responsibility. Local control of resources could be achieved with the use of a local veto over decisions that affect the community. Local control must be limited when it begins to interfere with the control and viability of other localities.

Community design must recognize the social, cultural, and economic needs of various communities.

Different strategies will be required for different communities.

"My view is that this topic could be discussed with respect to three organizing principles: The first is based on spatial scale...The second is based on temporal scale...The third is concerned with the role of community-based interest groups in the planning process."

— Raymond Torchinsky, symposium participant

"The biggest obstacle to sustainable development in municipalities is resistance to change - from vested interests and from institutional inertia."

— Noelle Reeve, symposium participant

It should be recognized that communities do not have a monopoly on knowledge. In addition, communities may want control over certain things but they may not want the responsibilities that go with others.

The priorities of the community should take precedence over our individual rights; in other words society must move further along the spectrum from individual rights toward community responsibility.

Recommendations From Individuals

Workshop 1

Improve information on environment and economic linkages by:

- improving monitoring systems; e.g., state of the environment reporting;
- preparing an ongoing inventory of resources and impacts in a region;
- defining the carrying capacity of a region related to quality of life needs; and
- demonstrating the relationship between economic development and ecology and introducing a new pattern of economic development.

Change people's attitudes by:

- stressing the need for individual action (i.e., empowerment) and developing a sense of individual responsibility thereby moving away from blaming others for past problems;
- considering the role of the family;
- starting to educate the children rather than those who have already made their minds up;
- developing education that connects into people's way of life;
- getting into the media with a debate on sustainable development;
- studying a group of people who are willing to address these problems, feed into the general community;
- acting individually to avoid ecological disaster;
- encouraging grass roots development;
- changing attitudes on a global scale;
- keeping the discussion of sustainable development broad by involving as many sectors in society as possible; and
- building bridges between interests and being opportunistic within a community to develop a strategy for sustainable development.

The solutions are simple: getting people to accept them is the dilemma.

Actions for communities:

Revise official community plans to:

- provide tax incentives for stewardship;
- encourage urban food production;

> "...the needs of the planet are the needs of the person. And, therefore, the rights of the person are the rights of the planet. If a proper reverence for the sanctity of the Earth and the diversity of its people is the secret of peace and survival, then the adventure of self-discovery stands before use as the most practical of pleasures."
>
> — Roszak 1978

- promote biological resiliency;
- use citizens, community groups to monitor environmental impacts; and
- don't rely on the establishment to do this job.

Reallocate political and economic power if basic needs are not met by:

- setting objectives using the community as a starting point;
- establishing a policy planning and decision making framework to meet those objectives (e.g., change taxation and pricing systems to achieve the defined objectives);
- improving democratic participation by forming a shadow council;
- creating social safety nets (e.g., reduce social inequity through the use of social housing); and
- identifying case studies to show what works and what doesn't work to determine the best way to achieve sustainable development.

Other:

- Give standing to people to fight for environmental protection in court.
- Reallocate money from productions of armaments towards resolving these problems.

Workshop 2

Increase awareness by:

- changing the school curricula to include courses on global awareness and environmental values;
- changing the school structure to make students and teachers more autonomous;
- using financial incentives and disincentives to shift advertising away from promoting over-consumption and destruction of the environment;
- improving media reporting of non-economic indicators of quality of life (e.g., pollution rates and health statistics);
- providing prime time access to the media by communities to promote awareness of environmental issues;
- twinning Canadian cities with cities in the developing world to emphasize how the other half lives (this is not the same as twinning with other cities in the industrialized world for trade purposes);
- establishing a seniors' lobbying network; and
- preparing a seminar presentation on sustainable development for the Union of B.C. Municipalities. More research will be needed by the university, community representatives, and symposium participants.

Actions for communities:

Use zoning to re-inforce positive personal attitudes such as the use of public transit (higher density development, improved transit).

Local government should take a lead role in promoting sustainable development practices (e.g., Vancouver should find a local solution to their own garbage problem).

Require a sustainable development plan for all communities.

Institute taxes or incentives for products based on sustainability criteria. Implement a new tax on vehicle sales and gas consumption.

Give communities the power to veto outside developments.

Develop social programs to help people hurt by institutional changes.

Assess all municipal legislation and policy for appropriateness with the objectives of sustainable development.

Create an inter-ministry agency to move departments toward sustainable development.

Create an environmental assessment zoning process correlating tax assessment to environmental impact of development.

Limit urban size.

Institute co-management of local areas and require arbitration between parties in cases of conflict.

Other:

The federal government should place a 100% tax on fuel and automobile sales. The distribution of revenue should be as follows: 2/3 distributed internationally to underdeveloped areas, 1/3 to transit subsidies.

Recognize and settle aboriginal title claims.

Canada should give up sovereignty to the United Nations to encourage international cooperation on global environmental and social problems.

As the existence of poverty precludes the achievement of sustainable development, we must improve equity within BC and internationally.

WORKSHOP RECOMMENDATIONS

Workshop participants agreed on the following recommendations which were presented to the symposium Plenary session.

Planning Sustainable Communities I

After a very wide ranging discussion, the following definition was accepted as a summary of this workshop's description of a sustainable community.

A sustainable community is a settlement which:

1. has a stable, healthy population;
2. understands that humans are only one of many life forms which share a sustainable region;
3. is a population with a strong sense of place, history, and global responsibility;
4. is empowered to guide an ecologically regulated economy based on the sustainable harvest and conservation of local natural resources;

> "There is no quiet place in the white man's cities. No place to hear the unfurling of leaves in the Spring, or the rustle of insects' wings...And what is there to life if a man cannot hear the lonely cry of the whippoorwill or the argument of the frogs around the pool at night?..Whatever befalls the earth befalls the sons of the earth. If men spit upon the ground, they spit on themselves. This we know -- the earth does not belong to man, man belongs to the earth. All things are conncected like the blood which unites one family. Whatever befalls the earth befalls the sons of the earth. Man did not weave the web of life; he is merely a strand in it. Whatever he does to the web, he does to himself."
>
> — Chief Seattle, quoted in Barnaby 1988, p. 159

5. shares both its surplus production and culture with other communities and regions;
6. has a collective ethic of conserving its culture and natural resources for future generations;
7. does not export pollution to other regions;
8. does not base its affluence on the draining of resources from other regions;
9. reduces to a minimum income leakages which leave the community;
10. gains the fullest possible value from the harvest and manufacturing of natural resources through use of locally controlled and adapted appropriate technologies;
11. is committed to the goal of providing an equal opportunity for a high quality of life for all residents of the community; and
12. is a population which strives to continuously learn of its changing needs through the passage of time.

We recognize that creating sustainable communities will require attitudinal changes at all levels of society. We need to move beyond the point where community economic development and sustainable development are a contradiction in terms. Change has to come from the grass roots. To this end we propose the following actions be taken immediately, acknowledging that they are only a small sample of what is possible:

Individual level

Personal involvement in becoming agents of social change. Advocate and create holistic and co-operative decision-making institutions, which include representatives from all interests in society, by:

- starting in the home
- forming interest groups
- lobbying all levels of government, especially local
- running for political office
- forming shadow councils to demonstrate results from alternative forms of decision-making

Community Level

Many communities are already undertaking sustainable development projects. We can learn from their experience as well as create locally relevant projects. Within the existing framework of the BC Municipal Act:

- Revise Official Community Plans to include ecological parameters, especially the flow of materials and energy through the community. Prepare an urban conservation strategy.
- Involve citizens in monitoring environmental quality in their community, preparing an urban inventory, cleaning up the environment. Encourage self-reliance.
- Control the inflow and outflow of environmentally destructive materials through the community by appropriate by-laws.

> "Our diversifying power structure, with ever-multiplying special interest groups, village organizations, regional groupings, and transnational bodies, means that we can effect action, all at once and globally, to a concerted aim and by a diversity of means. We can even tailor solutions and actions in the smallest locality to meet the situation, and yet contribute correctly to a wider programme."
>
> — Barnaby 1988

- Create financial incentives for:
    1. recycling and composting,
    2. using appropriate technologies rather than energy and material intensive technologies,
    3. encouraging the use of alternative forms of transportation and discouraging use of private cars.

- Connect with existing programs that share common goals (i.e. Healthy Communities Projects that are now operating in 20 communities across Canada).

- Educate other communities through demonstration of sustainable development programs.

- Initiate sustainable development projects taking advantage of the existing 50% cost sharing program under the provincial economic development strategy.

- Conserve resources and financial expenditures through innovative solutions to providing infrastructure (i.e. design with nature).

- Change the BC Municipal Act to empower local municipalities to have control over local resources.

- Institute a land use control process that evaluates developments against long range criteria such as carrying capacity.

- Legislate greater public participation in decision making.

Provincial level

- Revise current forms of land tenure (especially with respect to aboriginal land claims and forestry).

Global level

- To balance the local perspective, and recognize the global impact of our society, contribute to a provincial environmental account that is drawn upon by Third World community groups to reduce their poverty.

Planning Sustainable Communities II

Attitude change through education

Action should be taken by the appropriate authorities or organizations to:

- Introduce sustainable development into the B.Ed and M.Ed. university programs to prepare teachers to educate children in these issues.

- Introduce flexibility into setting school curricula by local educators to reflect both locally-unique issues and interests and sustainable development concerns.

- Allow flexibility in creating a school learning environment that teaches children to be active rather than passive members of their community.

- Create an information secretariat on sustainable development issues which is integrated with schools, community colleges etc, and existing library facilities.

LOS ANGELES -- A vision of America's urban future emerged Friday as regional officials in Southern California voted to impose drastic restrictions on everyday activities to reduce air pollution.

The three-phase plan, if put into effect, would require that all cars be converted to electric power or other "clean" fuels by the year 2007. Other provisions, beginning as early as this year, include a ban on lighter fluid for barbecues, outlawing of gasoline-powered lawnmowers and virtual elimination of free parking.

Among other things, work hours might have to be rearranged, and companies would be induced to move closer to where their workers live to achieve a better "jobs-housing" balance and thereby reduce traffic...

The plan ... has drawn wide national attention and stirred fears among the autmobile and petroleum industries, as the portent of things to come as cities become crowded and air unhealthy across the country...

The vote came after years of delay and over intense political opposition from the oil and automobile industries who say it represents a costly and authoritarian intrusion into personal lives.

The district has estimated that compliance will cost $2.8 billion a year for the first five years and result, by the year 2010, in 80,000 jobs that would not otherwise exist.

The study also estimated that 52,500 jobs would be lost, particularly in manufacturing.

The air-quality district estimates that the plan would cost the average resident $220 a year and bring benefits of almost $600 a year.

— NY Times News Service 1989

- "Twin" BC cities with cities in the developing world to increase local awareness of international inequities and the implication of local actions on global problems.

- Establish a community goal setting process through public forums in order to set planning priorities.

- Require free/equal access to media for the promotion of sustainable development (democratize the media).

- Provide public funds to NGOs for the preparation of sustainable development information releases on major media. (Could be part of a federally funded national media campaign on sustainable development).

- Enhance the NGO network to increase the profile of sustainable development issues and improve their lobbying power. NGOs should also strengthen their linkages to the local community to enhance the awareness and lobbying power of the general public.

- Prepare a presentation on sustainable development to the Union of British Columbia Municipalities provincial and regional conferences (presentation could be made by the School of Community and Regional Planning).

- Establish on-going research to clarify ideas on sustainable development to be presented to municipalities. Research should be undertaken by the SCARP, UBC, symposium participants, and community representatives. Information updates should be distributed by newsletter.

- Municipal governments should set an example by incorporating sustainable development criteria into the management of their own affairs (e.g., Vancouver could find a local solution to their garbage problem).

- Recognize and share the experiences of native people in the sustainable use of resources.

Institutional change

We recommend that action be taken by the appropriate authorities to:

- Review all municipal and regional legislation to ensure that it meets sustainable development criteria.

- Tax incentives should be implemented to encourage sustainable activities. Alternatively penalties should be applied to non-sustainable activities.

- Require all municipalities to prepare a community plan that:

  a) meets sustainable development criteria, and

  b) requires public participation.

  And further require that all municipal government policies (including zoning by-laws and taxation schemes) are in compliance with the plan.

- Eliminate inequities (in wealth and availability of services) within BC society which impede the ability of some communities to be sustainable.

- Recognize and settle aboriginal title claims in order to achieve sustainable development.

- Develop sustainable technologies for urban areas (i.e., ecologically sound waste disposal technologies, clean transportation, energy efficient technologies).

To ensure that the impetus for change to sustainable community development (i.e., ecodevelopment) comes from the, local level, we further propose that a decision making forum made up of local representatives (including NGOs, elected politicians, business leaders, etc.) and representatives from all relevant ministries (federal and provincial) be established. This forum should meet regularly to deal with regional development and social issues. Boundaries of these regions should be determined on a bioregional basis.

ENDNOTE

1 The ideas in the introductory section of this chapter are derived from Bailey 1988.

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Courtney Delaney From "RE:SOURCES"

PREFACE TO THE NATURAL RESOURCES WORKSHOPS

The natural resources of British Columbia continue to form the mainstay of the provincial economy. The symposium organizers therefore prepared background papers for workshops in agriculture, fisheries and water, forestry, and non-renewable resources. Two additional background papers were written on integrated resources management and the implications of global climate change on natural resources.

Natural resources have long been appreciated for their contribution to the economy; only lately has attention turned to the effects that resource harvesting has on the biosphere upon which all life depends. Sustainability of the biosphere requires sustaining natural systems as complete systems and not as discrete sectors.

With increased talk of integrating resource management, we must review our administrative arrangements and management practices. Sustainable development requires the fostering of an integrated resource management ethic in managers of these resources.

Of the B.C. resources discussed during the symposium, only agriculture operates exclusively under private land ownership. Water, fish, forests, fossil fuels, and minerals remain largely under public management and pose different challenges to managers and planners alike.

Not only do these resources have individual management challenges, but they also directly and indirectly affect the other workshop topics: provincial strategies, sustainable communities, and economic opportunities for sustainable development. Discussions of provincial strategies covered a wide range of issues, including the degree to which these four natural resource sectors are of vital concern to B.C. Many northern communities depend on one or more of these sectors for their livelihood. The sustainability of these communities very well may lie in the sustainability of these resources. Certainly in the face of change, uncertainty, and new technology, resource managers must use foresight and long-term vision to recognize the economic opportunities of sustainable resource management practices.

The economy of B.C. has been built on the wealth of its natural resources. This province's beauty and natural diversity is a subject of international renown. We must question whether present patterns of resource stewardship and management deserve this recognition and whether a diverse natural bounty will be part of our future.

The following four chapters review the background information provided for participants and outline the discussions and recommendations from each workshop.

SUSTAINABLE AGRICULTURE

FOOD AND AN UNCERTAIN FUTURE

In a time of growing uncertainty about the security of future world food supplies, it is imperative that B.C.'s agriculture and food policy be explicit about its short and long term goals, and that this policy be formed in a much broader spatial and temporal context. There must be a process for determining B.C.'s response to worldwide phenomena including possible climate change and rising sea levels, loss of quality agricultural land to urban uses, soil degradation, the consequences of increased ultraviolet radiation, and population growth. These factors all obscure the predictability of the earth's capacity to meet the food needs of present and future generations.

In order for B.C.'s agriculture industry to adapt to both foreseeable and unforeseeable changes, the province's agriculture policy and programs must maintain flexibility in all aspects of the agriculture and food system. In agriculture, this requires protection and enhancement of both physical and human resources. Our most productive lands must be retained for agricultural purposes; soil and water must be managed as renewable resources; and farming communities must be be given socio-economic support through planning, land use, tax, and social policy sensitive to the requirements of agriculture.

HOW FLEXIBLE IS B.C.'s AGRICULTURE SYSTEM?[1]

Between 1974 and 1987, approximately 6,500 ha of high capability agricultural land, Canada Land Inventory class 1-3, were excluded from the Agricultural Land Reserve (ALR) in B.C. (B.C. Provincial Agricultural Land Commission 1988). Although the quantity of agricultural land within the ALR is relatively unchanged, quality is declining; lower capability lands in the northern regions of B.C. have been brought in to replace higher quality lands removed from the ALR in southern regions.

B.C. soils suffer severe, localized degradation due to poor management practices leading to soil erosion, acidification and compaction: up to 30 tons/ha of soil are lost under row crops in areas of the Fraser Valley each year (Senate Standing Committee on Agriculture, Fisheries and Forestry 1984; Dumaski et al. 1986).

Farm backruptcies in B.C. totalled 36 in 1986 compared to 5 in 1982 (Agriculture Canada 1988); the number of farmers under the age of 35 declined by 33% since 1981 to 2,212 (BCMAF 1987).

Last summer's drought in North America, China, and the Soviet Union has left world grain stocks balanced on a knife edge between supply and demand. By the end of July 1989, experts calculate there will be enough wheat in the world for only 75 days consumption, enough corn for 50 days and enough soybeans for 47, well below levels regarded as adequate. Lester Brown of the Worldwatch Institute said "If there is another drought this year, all hell will break loose. Without question, we will have starvation, especially in the cities of the third world." John Morris of the Canadian Wheat Board said that the world needs above-average rainfall for at least two years before food stocks return to normal levels.

— O. Bertin 1989

Soil erosion, acidification, desertification, and the waste and pollution of water occurs on virtually every continent. Without conservation measures, the total area of rainfed cropland in Africa, Asia, and Latin America will shrink by 544 million hectares over the long term (WCED 1987). An estimated 26 billion tons of topsoil are blown or washed off cropland around the world each year (Worldwatch Institute 1988) .

Lester Brown of the Worldwatch Institute points out that last year the U.S. became a "food deficit" nation, producing 196 million tons of grain and consuming 206 million. The 100 or so nations that purchase food from the U.S. are being supplied out of dwindling American reserves, now down to one-third of U.S. stocks of just two years ago. The world's carry-over supplies have been reduced from 101 days of food consumption to 54 days, which is just about enough to keep the global food pipeline filled. "If the drought goes on" says Brown, "we could see a frantic scramble for supplies that would shake up the world economy."

— H. Sidey 1989

"It is impossible to separate the biological problems of practicing ecological agriculture from those of inadequate credit, technology, education, political support, and access to public service. In conclusion, the requirements of sustainable agroecosystems...illustrate the requirements of a sustainable society."

— M.A. Altieri, D.K. Letourneau, and J.R. Davis 1984

Rather than actively retaining flexibility in the system, these facts suggest that our policies may be limiting the flexibility of possible response in the agriculture industry. What *is* the basis for policy formation and decision making in B.C. agriculture, and what should it be given these facts?

QUESTIONS FOR DISCUSSION

The following questions were prepared by the Symposium organizers and included in the invitation to the Symposium.

Given British Columbia's existing dependency on food imports and the declining quantity and quality of agricultural land, should the province be considered under/over populated?

Is agricultural self sufficiency (or at least balanced trade in agricultural products) a necessary part of a sustainable economy?

Sustainable agriculture requires a substantially higher commitment of resources to maintaining the ecological base (i.e., soil, air, and water). Should food prices reflect the true cost of production? How would this affect the availability of an adequate diet to the poor?

What farm financing options could be used to promote the conservation of agricultural resources? Is the family farm sustainable?

How should global climate change and the threat to the world's major agricultural areas be reflected in B.C. policy?

Do agricultural chemicals, monoculture, and dryland irrigation have a role in sustainable agriculture?

Should land use and tax policy in urban areas favour development within existing urban boundaries as opposed to expansion into rural regions?

Do we need to re-examine the role and powers of the Agricultural Land Commission?

Should B.C. Hydro and the B.C. Ministry of Highways accomodate the requirements of agriculture in their corridor and route selection?

SUMMARY OF WORKSHOP DISCUSSION

The following points provide a summary of the discussion that took place during the Sustainable Agriculture workshop. From the nature of the discussion it is apparent that the principles of sustainability are new to the agriculture industry; they are not intuitively understood nor comfortably discussed at a common level among people involved in various aspects of the industry. This underlines the point that agriculture and food policy in B.C. and the rest of Canada has not been developed within an explicit framework of sustainability.

The following was agreed upon by workshop members to be an acceptable working definition of sustainable agriculture. The workshop discussion evolved from this common starting point:

> "Sustainable agriculture in B.C. would be a strategy that integrates all human and natural resources as well as financial and physical assets for maintaining and

increasing the well-being of a provincial food production and supply system. This includes rural integrity, open spaces, employment, and other quality of life intangibles."

SUBSTANTIVE ISSUES

General

A provincial sustainable agricultural policy needs to be developed within a global context.

The goal of sustainable agriculture has to be decided upon: are we to sustain food, land, profits, or the biosphere?

The following requirements of sustainable agriculture were suggested:

- having sound commercial markets;
- using sound soil and resource management practices;
- recognizing the family farm as the backbone of the industry;
- improving technology transfer from researchers to farmers; and
- preserving human resources in agriculture through ensuring stable, adequate incomes.

There is an educational crisis in B.C. with regard to farmers, agricultural students and the public because agriculture is not in the mainstream of public concern: British Columbians feel they can rely on Alberta and California for their food.

In B.C. there is more than degradation and lack of respect for the land base; there is a lack of respect for the people who work the land.

The nature of agriculture in B.C. is changing. Services in rural areas are declining. Increasingly the expertise in agriculture is people from "pure" disciplines such as biochemistry and economics. We need to attract people with agriculture/agribusiness backgrounds.

Self sufficiency in food does not necessarily imply food security.

Sustainable agriculture implies "on site" self-sufficiency, where ecological processes maintain productivity.

There are limits to agricultural growth in B.C.; the agricultural land base is limited and we will soon reach (if we haven't already) a plateau for intensification of agriculture. We can't expect intensification to increase every year like GNP. It was argued that we need more intensification if we are to achieve sustainable agriculture, where intensification implies in-depth knowledge of, and involvement in, the agroecosystems of farms (such as required in "organic farming").

Land Preservation

Sustainable agriculture in B.C. is dependent upon the preservation of prime agricultural lands for these lands allow us the greatest flexibility in terms of production. Flexibility of response depends on preserving resources.

We need to address the growing B.C. population and the need to preserve prime lands in close proximity to urban centres. The Fraser Valley is a case in point. Ideal climate and soil conditions in the

It is my opinion that most farm land is being under-utilized for agricultural purposes right now. Substantial increases in food production are possible in B.C. mainly through intensive, large scale, factory-like developments. I would not advocate the wholesale removal of (the unused agricultural) lands from the ALR for urban uses as this would reduce the livability of our existing urban community. This is highly controversial in Richmond at this time; the issue not whether we need the farm land so much for farming but as a greenbelt for urban residents.

— Ron Mann, Richmond Planning Department. Invited participant; taken from written submission sent in place of his attendance

Kelowna: Fruit growers want orchards removed from the Agriculture Land Reserve. "We are slaves to our land," said one grower as B.C. Fruit Growers Association delegates narrowly approved a resolution to return control of all Interior land to growers. Speakers said they want to take advantage of economic opportunities when disposing of their land.

— Canadian Press 1989

> With the development of a sustainable economy and sustainable use of our natural resources it is an integral part of such a plan that the goal of agriculture be self-sufficiency in food production, this being achieved through a balance of agricultural trade. Any other goal leaves us open to continued alienation of farmland with the ultimate possibility of being held ransom for our food.
>
> *— Henry Frew, symposium participant*

> Taxation, lack of protection and land costs are among the three main factors which force farmers into the excessive use of chemicals, monoculture and other poor farming practices. Sustainable agriculture is achievable if the people of this province, and nation, want it to happen.
>
> *— Henry Frew, symposium participant*

Fraser Valley make it extremely valuable for agricultural production while it is the primary population centre for the province.

Capital gains from the loss of prime lands to competing uses could be recycled back into agriculture through the upgrading of lower quality farmlands. This would be similar to B.C.'s Crown Land Fund. An alternative to capital gains recycling would be a hectare for hectare trade (one hectare of land brought into production for one hectare of land lost).

As an alternative to strict land preservation, it was suggested that it is okay to lose productive farmlands if this loss is balanced out by an increase in productivity. The decrease in productivity should be monitored across Canada as lands are lost.

The Agricultural Land Reserve

The Agriculture Land Commission is not sufficiently interdisciplinary to deal with conflicts. There is a collision between market forces and legislative forces, especially at the urban fringe. Provincial and local governments must be better partners in planning.

The ALR has only slowed rather than stopped the loss of agricultural land to competing uses. The Land Commission, administrator of the ALR, is seen as a "rationing board". Commission administration occurs in an "informational vacuum" resulting in poor decisions.

B.C. cannot afford to leave land use to the "free" market; we need to maintain agricultural zoning. All B.C.'s agricultural lands have a higher value under other uses. The ALR needs public support.

More research regarding commodity and production inventories is needed to determine if the right amount of land is in the ALR .

Farm Viability

Sustainable agriculture must be profitable and economical; however, the link between sustainable agriculture and economics must be better understood. The profit motive must be recognized in any sustainable agriculture policy.

B.C. farmers must compete with quality not quantity; we must find niches such as organic foods. Do we intensify all 80 commodities in B.C. or just a portion, keeping in mind that diversity leads to stability?

Input costs of all kinds must be lowered to farmers.

Rigid marketing boards lead to decreased flexibility and uncertainty regarding land and production inventories because supply is artificially set. However, it was pointed out that the dairy industry, with a strong marketing board, has adopted the best conservation management practices (crop rotations, use of manure) due to long term financial security.

Our current agricultural marketing system allows access to international markets; we should not limit beneficial trade through provincial agricultural strategies.

Some participants favored the goal of food self-sufficiency; others were hesitant about the merits of this goal.

Rapid price changes due to global market connections have impacts on farm viability in B.C.

Our current market system is creating problems in agriculture:

- price support systems distort markets; and
- competition in the market place leads to environmental degradation.

In Australia, farmers earn a living wage, but food prices are higher. B.C. needs to provide farmers with higher wages to empower them.

Poverty and resource degradation are very related. B.C.'s impoverished agricultural industry is the root of environmental degradation of farmland. It was argued, however, that soil degradation still occurs when food prices are high.

The psychology and motivations of the farmer in the market place has to be understood as we discuss sustainable agriculture policy. We need to recognize the following factors:

- fear of income loss: as prices fall, production increases which increases pressure on resources;
- uncertainty of income flow, leading to a banking mentality and investment;
- many farmers are competitive by nature. In the past, soil conservation and good resource management was the goal to strive for. Today, farmers are competitive with respect to income level;
- there is no feedback on the use or degradation of the "commons" (i.e., there is no cost accounting for soil erosion); and
- farmers' production practices are greatly influenced by the information they receive on technology; currently growers lack information on agricultural technologies.

Income

Famers have relatively low incomes in our society. There is a need for long term growth in farm income in order to maintain the quality of life in rural settings.

B.C. must integrate all farm processes (production and distribution) between the producer and consumer so these processes are more equitable: farmers must get the same access to consumers as multinationals.

Farmers produce more than food; there should be a transfer of wealth to farmers for their role as stewards of the rural landscape. We must sustain those that sustain the land. It was suggested that farmers need a base income to compensate for retailing inequities, or society should support the agricultural community through income transfer because farmers offer society goods and services other than food.

We must decide: the free market system or income stability?

Financial support

Some participants argued that Farm Income Insurance (FII) predominantly supports larger farmers and costs B.C. millions due to the design of the program. Further, the banks get too large a

> When considering the sustainability of the existing food system in B.C. I assume that in the long-run it is not sustainable in its present form (current methods of production and consumption erode the resources). To adjust current production and consumption methods so that they contribute to the sustainability of society and the environment, the set of optimization criteria of individual farmers, processors and consumers needs to change. Markets for food will change. Already, in a limited market premium prices are presently being received by producers of what are called organically grown food products. This premium can offset the additional costs or lower yields of sustainable production methods.
>
> *— Walter Riemann, workshop participant*

Organic pest management is achieved by diversifying the plant complex to increase the complexity of the insect population and so more closely approximate the natural balance. The organic farmers who follow these practices do so in the knowledge that they are not dominant but equal to the species which they manipulate. While the farmer plays the active role in the practice of sustainable agriculture, each member of society plays a passive role as a consumer of food products. You, the consumer, cast a vote with every food item you purchase. When we emphasize the development of a sustainable method of agriculture we are laying the foundation for sustainability in every aspect of our culture.

— *Wayne Still, President of the Similkameen Okanagan Organic Producers Association, workshop participant*

While there are exceptions, there remains a persistent attitude that the ALR is little more than an urban/industrial/open space recreation land bank. Despite rhetoric to the contrary, official community plans all too often contribute to the planned obsolescence of the agricultural resource. If sustainable agriculture is to be achieved, a fundamental shift in attitudes amongst municipal leaders must be followed by new policy directions emerging within local government planning documents. The ALR, while all too often viewed only as a hindrance to growth, should act as a catalyst for well managed regional development and the basis upon which sustainable agriculture rests.

— *Barry Smith, Planning Officer, Agricultural Land Commission, workshop participant*

proportion of income support payments. Others argued that FII predominantly helps the smaller farmers.

Financial aid must consider the peculiarities of farming; a system of financial need for different growers must be developed.

Aside from financial aid, knowledge is the best support we can offer farmers. Farmers need to know when to take advantage of market opportunities. For example, there is a growing demand for organic produce. B.C. conditions are unique in the world, and could be taken advantage of for "specialty markets".

Soil and Water Conservation

Soil degradation is a symptom of problems in the rest of the agriculture/food system.

Current laws do not prevent soil degradation because they are not enforced.

The result of ad hoc agricultural programs is often unsustainable practices.

There are serious soil erosion problems in Matsqui as evidenced by a farmer who wants to subdivide his land because he says it is no longer fit for agriculture.

Conservation practices must be profitable; society must be prepared to pay the costs of conservation. Education and technology transfer to farmers is the best support that we can offer farmers; B.C. needs regional or provincial programs that support individual farmers with soil conservation projects.

In Australia, soil conservation districts were formed by farmers, and are successful through peer pressure and demonstration.

Farmers and food processors must lobby the government for resources as they are the ones who will be losing their jobs if action is not taken.

The availability of water influences all aspects of society and the natural world. Therefore a water strategy must be incorporated in any sustainable agriculture policy or provincial land use plan.

Environmental Impacts

We are trying to sustain the biosphere; agriculture policy and practice must be in harmony with this larger goal.

In general, food production degrades the environment. This is worsened by competition in the market place. Sustainable agriculture must recognize the ecological limits of the biosphere and maintain environmental quality in rural settings.

The B.C. government should increase monitoring of food quality.

Capital gains from the loss of agricultural lands to competing uses could be used to enhance waterfowl areas which are affected by agricultural drainage.

Low energy prices form the basis for conventional agriculture. We need two time-frames: 1) present 2) post fossil fuel use. The poultry industry right now is very intensive and generates tons of unused waste. Increased energy prices may force us to begin crop/livestock integration.

B.C. must move away from monoculture.

PROCEDURAL AND INSTITUTIONAL ISSUES

Integrated Land Use Plan

B.C. requires an integrated land use plan putting agriculture as a priority land use. Such a plan needs to examine urban and rural needs, and must consider settlements and address population growth.

The provincial government must seek input on a regional basis from the general public, farmers, and food processors in policy formation. Otherwise, the plan will be constantly undermined; trust and cooperation are central to a successful plan.

The public is ready to "come on side" in these matters; they need to be given a forum.

The best innovations always come from lower levels in society. We must give farming communities the opportunity to develop their own strategies. A provincial strategy will never work; we need localized plans.

The plan must include a water strategy: we need an excess water strategy for south coastal B.C. and an irrigation strategy in dryland regions.

A social policy is needed to give monetary credit to farmers for services other than food production.

The plan needs legislative teeth to force individual land managers to implement the plan.

Land Preservation and the Agriculture Land Reserve

Local government alone is inadequate in preserving agricultural land. B.C. needs coordinated municipal and provincial zoning.

A national agricultural land use body would add another level of importance to land preservation.

The Agriculture Land Commission's (ALC) mandate must be expanded to include an integrated land use planning approach. Municipal and provincial agricultural land use zoning must be consistent. We need an interdisciplinary approach to land preservation. The ALC must take a more integrative approach to deal with conflicts between market forces and legislative forces at the urban fringe.

Production projections are needed to rationalize land preservation.

Removal of the appeal process would make the ALR 92% effective.

WORKSHOP RECOMMENDATIONS

Sustainable development in agriculture is the integration of all natural and human resources as well as financial and physical assets for maintaining and increasing the well-being of a provincial food production and supply system within a sustainable global context. In this definition, wealth is not only seen in terms of monetary values but should be broadened to include environmental and other values. In agriculture, this includes rural integrity, open spaces, employment, and other quality-of-life intangibles.

Agriculture Minister John Savage has issued statistics to back up his claim that the Agriculture Land Commission is "no paper tiger." "Since it was established, the commission has added to the ALR almost as much land as it has removed. As a result, the number of hectares in the ALR today is virtually the same as it was when the Agricultural Land Reserve was formed in 1974," he said. "In the past 10 years, a total of 118 appeals were made to cabinet regarding ALR exclusions and many of them were supported by local government. Of these, 77 were successful. The commission wins some and loses some at the appeal stage," he said.

— G. Mason 1988

As a result of the uncertainty created by fluctuating market prices, the expected climatic change, political unknowns, growing population pressures and increasing public concern over the quality of food supplies, a strategy for sustainable development in agriculture is needed.

The workshop established three main principles for sustainable agriculture:

- recognition of the need for flexibility in all aspects of the agriculture sector
- the preservation of high quality lands with favourable climate and water combinations to ensure indefinitely an adequate resource base to support agriculture
- acknowledgement of the importance of the human resource represented by the farmer and all people in the agri-food support system.

The workshop produced the following recommendations which received consensus:

- The province must reestablish a monitoring function to take a full environmental inventory province-wide. Data collection should include information on the state of the resource in all sectors.
- B.C. must develop an integrated, comprehensive land use plan in conjunction with an Integrated Resource Management approach. Among other things, this plan will dictate drainage and irrigation programs in the province.
- The BCMAF must develop a strategy to face possible climatic change. B.C. must maintain a climatologist concerned specifically with agriculture.
- A more sophisticated soil fertility model is needed in conjunction with on-farm research and demonstration projects.
- The BCMAF must transfer the principles of agricultural sustainabililty to growers through extention services and seminars.
- Federal and provincial agriculture ministries should establish and follow criteria for sustainable agriculture in all programs.
- The farmer must be recognized as instrumental in achieving sustainable agriculture in B.C.
- Farmers must be able to capture a larger share of dollar returns for their goods in the market place.
- Mechanisms to support farm incomes must be flexible should we need to harmonize them with Free Trade and GATT requirements.

The following issues were discussed, though members did not reach consensus nor make recommendations on these matters:

- The lack of respect for physical resources in agriculture are parallel to the lack of respect for farmers and farmworkers in B.C.
- We need to provide incentives for farming and disincentives for non-agricultural uses of farmland.
- Farmers should be financially rewarded for the non-food services they offer, including open spaces and rural integrity.

ENDNOTE

1. The introduction is summarized from Hursin and Sanford 1988.

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SUSTAINABLE DEVELOPMENT IN FORESTRY

(Workshops I & II)

In British Columbia, the forest industry is the dominant user of land resources, operating on 49% of the land in B.C. that is forested, and making a significant contribution to the provincial economy.[1] While governments and industry are endorsing the concept of sustainable development, the demands on B.C.'s forested lands continue to grow from all resource users. How flexible are B.C.'s forest policies and management practices to the changes which may be required?

Movement towards sustainable development will require institutional flexibility, public involvement, and an integrated-use perspective. Non-market considerations must find their way into the planning process. As well, community stability, based on long-term supply of the resources, must be a factor.

Challenges facing forestry in B.C. include:

- **The current state of our forest resources**

Forestry in B.C. is entering an increasingly uncertain era. Each year brings us closer to the "fall-down" phenomenon; the ramification of shifting from an industry based on high-volume, old growth timber, to one relying on lower volume, second growth, managed forests. Compounding the uncertainty in this shift are such factors as the potential change in climate-associated global warming, the potential loss of production associated with ozone depletion, and continued uncertainty in world markets with attendant cyclical price changes.

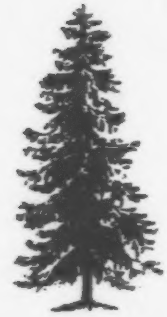
- **Economic dependency of B.C. on the forest industry**

In 1987 the value of forest product shipments contributed 21% of the Gross Provincial Product (GPP) of B.C. and 48% of the value of manufacturing shipments. The forest industry directly employs 78,200 British Columbians contributing an estimated $2.7 billion in annual wages, and indirectly accounts for another 156,000 jobs (Wilson 1988, p. 28).

Current management policies and practices are oriented mostly to the extractive resource industry and do not address fundamental issues of sustainable development such as community stability, ecosystem maintenance, and regional disparity, nor do they adequately ensure continued economic growth.

- **Increased demand for public participation in decision-making**

Conflicting demands for forest use have increased to the point where it is the subject of almost daily reporting in the media. This demonstrates a rising level of public emotion regarding forest use.



QUESTIONS FOR DISCUSSION

The following questions were prepared by the Symposium organizers and included in the invitation to the Symposium.

How can the increased demands by the public for participation in the decision-making process be reconciled?

Should legislation be introduced/revised to permit greater flexibility in the allocation of allowable annual cut (AAC) to accommodate changing societal values and environmental conditions? If so, how should this occur?

Should the economic and social needs of communities be incorporated when granting timber supply to a mill? If so, how should this occur?

Given the intense competition we face in world markets, how can social and environmental costs be incorporated in wood prices?

How can forestry be better integrated with overall land-use planning to avoid problems of conflict?

Are current methods of clearcutting, slash burning, and intensive chemical use sustainable in the long run?

Would greater allocations to small, locally based forest companies result in a more socially, environmentally and economically sustainable forest industry?

> ...[K]nowledge about the economic margin of the existing inventory is, *at best* uncertain (I.R.P.P. 1985, p. 3). Potentially lower future production costs or increases in prices could improve the supply picture by increasing the amount of economically available timber. However, unless these conditions come to pass, "the portion of the mature stock from which the supply of timber is to be drawn ... will be substantially less than is currently expected.
>
> — Williams and Gasson 1986, p. 16

> Development should be ecologically sustainable, meaning that resources should not be used up faster than can be regenerated by nature. If this is accepted as a first principle, *then conservation of the source of forest health and wealth; the soil, the forests' genetic diversity and the forests' ecological diversity* would be a prerequisite to every forest plan. It is therefore far more crucial to get consensus on what kind of forest we want than to debate the means for achieving it. As Alice in Wonderland said, *"If you don't know where you are going, then any path will take you there."*
>
> — Ray Travers 1988 (original emphasis)

Much of the concern over land use conflicts such as South Moresby, Meares Island and the Stein River Valley exists because of the public perception that these areas should be preserved and that forests elsewhere have been mismanaged.

The following criteria for sustainable development of forestry were drawn from the literature to form a basis for assessing the suitability of current and future forest management.

Among others, sustainable development requires:

- a political system that secures effective citizen participation in decision-making;
- a production system that respects the obligation to preserve the ecological base for development;
- an international system that fosters sustainable patterns of trade and finance; and
- an administrative system that is flexible and has the capacity for self-correction (WCED 1987, p. 65).

Managing forests on a sustained basis must include:

- ensuring a supply of wood fibre indefinitely for society while maintaining ecosystem integrity,
- conserving adequate resources for future generations,
- meeting essential needs for jobs, food, energy, water and sanitation,
- maintaining species diversity,
- maintaining the productive capacity of the underlying ecosystems,
- encouraging local participation in development decisions, and
- merging environment and economics in decision-making.

FORESTRY WORKSHOP DISCUSSIONS

This section summarizes the discussions in the two forestry workshops at the symposium "Planning for Sustainable Development". The discussion is reported according to classes of issues (substantive and institutional/ procedural) and general themes that emerged.

SUBSTANTIVE

Land Use

The industry perceives its land base to be uncertain because of competing land uses. At the industry level, certainty is critical for decision-making and security of supply is needed for investment purposes; certainty is also important for users of parks, wilderness and outdoor recreational facilities. To remove uncertainty regarding the land base, native land claims must be resolved.

Presently, vocabulary used by forest practitioners is not understood outside the forestry sector; changes must be made to ensure vocabulary is non-biased. As well, we need a definition of "old growth" forests.

No explicit goals or objectives exist for B.C. forests; we need a fair process for defining objectives and reaching consensus. The current forestry/land use ethic is considered to be inadequate because of its singular focus on the extractive industries. A forestry ethic which incorporates land use interaction, integrated resource management and industrial forests is essential.

Reforestation is very costly and returns are long term; thus we must recognize that decisions have long term and far-reaching implications.

The demands and requirements of mankind in 25 years should be determined—what models do we use?

B.C. forestry is part of the world market and there is a need to resolve conflicts between world market demand and local needs.

Private lands are productive but under-utilized.

There is a lack of public trust in forest practices. Changes in public demand require flexibility in managing the land base. We have to adopt a conservative risk-averse philosophy in order to maintain future flexibility and we must set aside areas of forest for a variety of management objectives.

There is a need for an equitable distribution of benefits from forestry resources. We have to assess the allocation system or adjust the tenure system to bring more control to the local level from large companies. The perception is that it is difficult to adjust current tenure because of external (company) control and that there is a concentration of access to forest resources and power.

Land use allocations are done by politicians, not foresters, resulting in interference with planning and resource allocations.

There is a need for non-partisan discussion of forest management and a clarification of management responsibilities. Decisions cannot be made from a narrow perspective; we need coordinated land use decisions regarding land use tradeoffs and better techniques for conflict resolution.

Research regarding the affects of climate change on forestry (global warming) must be pursued.

We are depleting old growth forests without having a good measure of existing old growth forests.

We have the responsibility for developing resources in an ecologically sound manner. B.C. forestry should be a model for the rest of the world and for other resource users.

The forest ecosystem and biological diversity must be maintained, not just the trees. We cannot support ecological diversity by having a series of monoculture stands.

Greater emphasis must be placed on silviculture.

We need to establish levels of consumption which recognize ecological carrying capacities and we require a better understanding of ecosystem recovery after management with respect to stability (long term).

Protection and maintenance of long term site productivity is of paramount importance and with increased interest in intensive forestry we have to be concerned with the maintenance of nutrient and organic capital of soil. Management to sustain forest production will affect soil protection and maintenance of ecological and genetic diversity.

The maverick E.F. Schumacher is credited with the insight that going for quantity, for high yield and high production, is a recipe for disaster. The safe and constructive path is pursuit of quality. In his words, look after the health, beauty, and permanency of the land, of ecosystems, and productivity will look after itself.

Note the suggestion that priorities are wrong when high forest yield is the foremost goal, the bottom line. The top line, the route to sustainability, is the diverse, healthy, beautiful forest ecosystem. The push for high yield silviculture that does not respect diversity and health can only be justified by the large number of forest entomologists and pathologists that it keeps employed. As R.E. Balch once said, if the spruce budworm is successful in teaching this lesson it must be reclassified as a beneficial insect .

— Rowe 1989, p. 6

It was agreed that the industry is highly concentrated, and that provincial forest policy has the effect of encouraging that concentration. Flexibility in the allocation of timber has effectively been eliminated. Is there a problem with this high degree of concentration?

— I.R.P.P. 1985, p. 6

There are economic barriers to applying new technology.

Discussions regarding sustainable allowable annual cut (AAC) levels must be increased.

Human Resources

There are not enough Fish and Wildlife staff to monitor and enforce forestry impacts on wildlife resources. The US Forest Service has 700 Fish and Wildlife staff to monitor a harvest area equivalent to B.C.'s, yet our province has only 14 equivalent staff.

Our aspirations for management exceed our level of management (i.e. extent of human resources to manage and audit) and we lack specialist expertise.

Native Economic Development

Native land claims are a significant area of uncertainty and must be negotiated.

Native beliefs and values have been overlooked.

The forestry industry is concentrated and does not include significant native ownership.

The native forest land base is small with little access to crown resources or tenures. As well, resources are taken with little benefit to the band or nations. Little consideration is given to the impacts of forestry on trap lines.

Native people require improved levels of technical training and expertise.

Natives cannot get deposits for the Small Business Enterprise Program because lending institutions do not take reserve lands as capital.

Community Development and Decision-making

There is inadequate communication between the forestry sector and rural communities.

Local people are most directly affected by political decisions, thus the consequences of political decisions must be communicated beyond the forest workers.

Local communities have no role in forestry-related decision-making and people don't trust in the current system of decision-making.

There is a perceived and real economic inequity in the distribution of benefits between resource-based communities and urban areas. Uncertainty of the forest land base affects job stability in local communities while forest modernization and environmental pressures threaten the number of forest jobs (technological change - shift to capital over labour).

Local consensus on the meaning of sustainable development is lacking.

Public Information Program

There is inadequate communication between the forestry sector and the public. Forestry language is vague and problems with definitions affect communication. Thus, few people (including parks and wilderness and outdoor education people) have a good understanding of forestry. However, the media have generated more public awareness today about potential problems in forestry. Some

> Remember that each sector of the ecosphere, each forest ecosystem, influences and is influenced by the whole of which it is a part. Slightly less than half the weight of the biomass in every forest is carbon, so forests are carbon sinks just as they are sinks for nitrogen and sulfur. Hence every major change in the organic content of forest ecosystems has its effects on the chemistry of the atmosphere. Since 1860, forest clearing has contributed 90 to 180 billion tons of carbon to the atmosphere compared with 150 to 190 billion tons from burning coal, oil and gas, according to a recent Worldwatch report discussing the greenhouse effect and global warming. Only the terrestrial ecosystems of Europe and possibly of Japan and Korea are storing more carbon than they are releasing. Thus the rapid reconstitution of forests in Canada as well as world-wide has virtues that go beyond increasing the allowable cut.
>
> — Rowe 1989, p. 6

participants felt that inaccurate and misleading information is fanning the fires of public reaction to the forest situation.

Public concerns regarding forest practice issues must be addressed. We have to deal with public perceptions of decision-making and heighten public awareness of problems and progress in areas like reforestation and allocation of funding for reforestation.

Critics have had a change of attitude shifting from concerns about management to concerns about actual forest practices.

Canadians must change the existing forestry and land use ethic to include non-extractive values and to recognize ecological limits. We must communicate this new ethic and expose new citizens to Canadian culture such as wilderness parks.

Professional and Technical Education

There is not enough emphasis on social science in forestry education; current education teaches about trees not overall forest management.- The existing forestry ethic accepted among professional and technical people is inadequate in its consideration of ecological limits and non-extractive values.

PROCEDURAL AND INSTITUTIONAL ISSUES

Land Use Strategy

B.C. requires a publicly acceptable provincial land use strategy.

The strategy must establish integrated resource management and multiple stewardship, and coordinate land use decisions. Stewardship must be moved to more area-based management versus volume based management.

The strategy must outline mechanisms to ensure adequate reforestation and place greater emphasis on silviculture. Sustainable development must be emphasized recognizing the environmental, economic, social, political, and global impacts of forestry.

An old growth policy is needed including a definition of "sufficient old growth forests"; more research is needed on old growth forests.

Forests must be set aside for a variety of management objectives.

Forest Resources Conservation Board

B.C. requires a conservation board with a forest practices ombudsman or a mechanism independently to review practices and decisions.

The board must strive for openness, communication and honesty regarding successes and failures.

The Board must strive to make foresters accountable (need for definition of roles) and increase the visibility of experts.

Forest Management Practices

More research is needed on the long term sustainability of present forest management practices.

Regulations and incentives must be put into place for forest management on private lands.

A more flexible management system is needed due to unpredictable climate.

The high degree of concentration and allocation in the forest industry "...have been an obstacle to innovation and entrepreneurship on the part of those who would like to enter the industry; and have thwarted community and local interests insofar as they are unable to influence the pattern of development in an industry which is exerting significant influence on social and economic conditions in those same communities."

— I.R.P.P. 1985, p. 6

A genuine community is always characterized by integrity. The word "integrity" comes from the verb "to integrate". The opposite of the verb "to integrate" is "to compartmentalize". If the two ethics of sustainable development [the ethic of sustaining the resource and the ethic of development] cannot be reconciled by the community then it is not likely that either will succeed and a sustainable forest be created.

— Ray Travers 1988

The key log which must be moved to release the evolutionary process for an (land) ethic is simply this: quit thinking about decent land use as solely an economic problem. Examine each question in terms of what is ethically and esthetically right, as well as what is economically expedient. A thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends otherwise .

— Leopold 1949

Certain harvesting and management practices are undermining the future productivity of some sites through site degradation, causing a loss in BC of an estimated 400,000 cubic meters in annual production of wood—and that is increasing by some 50,000 cubic meters per year.

— FRDA 1988, p. 7

There is enough remaining mature timber to last until 2060, but virtually all the AAC is now committed to major companies holding forest licenses... [which]... apply to a particular sustained yield unit and cannot be shifted to another so that forests withdrawn in one area cannot be replaced with timber in another.

— Wilson 1988, p. 28

Management must consider the different resource users.

Appropriate technology must be utilized.

Human Resources

Fish and Wildlife staff must be increased to monitor forestry practice and impacts, and support staff (ie. hydrologists, soil scientists, etc.) must be increased in the Ministry of Forests, Ministry of Environment and the companies.

There is a need to clarify where responsibilities lie for forest management.

Native Economic Development

Land claims must be resolved through innovative means.

Natives must have a system of access to native resources and tenures as well as support in training and extension services.

Community Development in Decision-making

Large government and industries must decentralize, delegating authority to local decisions-makers and managers.

Wealth should flow back to local communities thus, community involvement (and protection) is required. We must consider the long term needs of locals versus the demands of corporate shareholders. Local involvement in the Timber Supply Area Steering Committee is required.

A fair process is needed for defining management objectives, conflict resolution and reaching consensus.

Public Information Program

The public need to be better informed about the current state of the forest resource and present management practices. This will require improved information dissemination and communication.

Public education (school system) must incorporate a land use/resource stewardship ethic which recognizes ecological limitations.

A centre for advanced studies in land use and policy analysis is needed.

Professional and Technical Education

We need improved levels of technical analysis for decisions regarding land use tradeoffs.

The current forestry ethic must be changed to include an understanding of land use interaction, integrated resource management and industrial forests.

We need generalized education regarding long term objectives for industry and government.

Royal Commission on Forestry in B.C.

Some participants feel that a Royal Commission on forestry is necessary to address the problems facing forestry in this province.

RECOMMENDATIONS

FORESTRY WORKSHOP I

The following recommendations are from the Forestry Workshop I:

1. We propose that British Columbia prepare a comprehensive land use strategy founded upon the premise of long term sustainability of our resources and our economy.

Such a strategy must be:

- integrative, that is consider both economic and environmental factors;
- comprehensive, considering all forest resources; and
- flexible, that is ensure our ability to respond to changing demands and values.

This strategy must be developed by means of a visibly fair and open process to foster consensus, agreement on terminology, broad societal understanding of the goals and desirability of a broadly shared land use ethic.

It must be targeted towards a fair and equitable distribution of benefits.

Finally, the land use strategy must explicitly address and foster consensus on B.C.'s requirements for wilderness and old growth preservation to contribute to a desired predictability for the industrial forestry and conservation sectors of our society.

2. Currently, insufficient human resources are allocated to planning, analysis, management and monitoring of all forest land uses. We recommend that this deficiency be addressed.

Specifically, emphasis is placed on the need for:

- specialist expertise including, but not limited to, soil scientists, and fish and wildlife biologists;
- scientific research on forest ecology; and
- adequate monitoring and enforcement.

3. Support should be increased for native economic development by:

- exploring options leading towards resolution of native rights;
- promoting dialogue between natives, Canada and B.C.; and
- recruiting and training natives in forest management; directly involving native bands and tribal councils in the development of the land use strategy; and providing access to land and capital for native entrepreneurs.

4. New mechanisms are needed for community involvement in decision-making based on the following principles:

- provision of strong local inputs in decision-making, with acceptance of consequences by the local community, having recognized that these people are in a favorable position to integrate the environment and their economy;
- delegation of district management authority to line managers;
- ensuring that people in advisory positions are representative of their community;

> The law alone cannot enforce common interest. It principally needs community knowledge and support, which entails the greater public participation in the decisions that affect the environment. This is best secured by decentralizing the management of resources upon which local communities depend, and giving these communities an effective say over the use of these resources.
>
> — WCED 1987, p. 63

> We can have a sustainable forest, but only if we constantly question and re-evaluate what we think we know (academically and professionally) and only if we retain all of the pieces—including old growth—from which to learn.
>
> — Chris Maser (as quoted in Travers 1988)

- consultation at the policy, land planning and implementation levels.

5. There is a need for a comprehensive public information program aimed at broad awareness, including measures such as a centre for information services and extension services, preferably regionally based and drawing upon existing centres of higher learning.

6. A vehicle such as a Forest Resources Conservation Board is required to provide ongoing independent auditing of forest land use management.

7. To foster sustainable forest development that is broadly-based, an independent, interdisciplinary resource planning secretariat with legislated responsibilities must be created for:

- developing comprehensive techniques for improved resource integration;
- preparing a comprehensive land use plan;
- analyzing resource land use conflicts;
- assisting local communities in the preparation of regional land management strategies with due regard for local public involvement; and
- implementing and monitoring of land use policies.

8. Review current professional and technical education towards developing enhanced education in forest resource management including:

- greater depth in critical specialties such as fish and wildlife management, forest ecology and research methods;
- greater educational breadth for the professional in non-technical areas such as humanities (philosophy, ethics, history), the cultural context (art, literature, anthropology) and communication skills;
- the design of fast-track technical and professional training for natives in resource management.

Such a task could be accomplished by a task force of land managers and educators by March, 1989.

9. Establish a Royal Commission on Forest Practices including a possible moratorium on the award of new Tree Farm Licenses.

(Consensus was not achieved on this issue)

10. To enhance sustainable stewardship of B.C.'s forest resources, forest management practices (e.g., logging and silviculture) could be improved by:

- reviewing clearcutting practices with a view to reducing soil erosion;
- explicitly aiming at optimum utilization and management of all forest resources;
- applying appropriate technologies; and
- promoting diversity in managed forests.

FORESTRY WORKSHOP II

The participants in this workshop had a long list of concerns to be addressed in the context of Sustainable Development. From that list, four main issues were drawn:

> ...Successful planning of the forest resource use requires that plans be both technically and socially feasible... If a plan or proposal is not socially acceptable, it will fail. Forest resource managers must be aware of public attitudes. They can no longer manage the resource without significant interaction with the public.
>
> — Cuthbert 1981, p. 9

> Sustaining forests means soft approaches that mimic nature. We do not understand how forests work and should not arrogantly presume that our view of a forest is sustainable. For example, large clearcuts, slash burning, planting, monocultures and pesticide applications do not mimic nature.
>
> — *Herb Hammond, symposium participant*

1) Definition of Sustainable Forest Development
2) Decision-making Problems and Imperatives
3) Education
4) Research

Definition of Sustainable Forest Development

The group adopted the Brundtland Commission definition that "forest development must meet the needs of the present generation without compromising the ability of future generations to meet their own needs." While recognizing there is more to this issue, the group agreed that sustainable forestry should meet the following four criteria:

1. It should meet an ecologically sound level of consumption of all resource demands, not just timber supply.

2. We (British Columbia) should produce our share of the goods required by the world and not shift demands elsewhere.

3. Forest resources should be developed to the level demanded as long as it does not exceed the ecological potential.

4. Sustainability should be reached on both a short-term (immediate) and long-term (generational) basis.

To reach these goals forest management should address the interdependence of the "Environmental Web" of soils protection, ecological diversity and genetic diversity. Management of the forest will require trade-offs in both ecological and genetic diversity on a local basis, but maintenance of an overall balance is a priority.

Decision-making Problems and Imperatives

The issue of decision-making includes two important aspects. First, the public is demanding effective input into the decision-making process throughout provincial forests. Second, those with power are going to exercise that power. From this basis, the decision-making process should address three issues for sustainable forest development:

1. Decision-making should be coordinated on a variety of scales (local, provincial and global).

2. Real local decision-making power is required to alleviate and/or prevent local citizens from a perceived feeling of alienation in a process which directly impacts on their lives.

3. Local and provincial decision-making should be placed within higher order (provincial or global) strategies to ensure overall imperatives and direction.

Education

Education was perceived by the group as the key to enabling ecologically, economically and socially sensitive management. To this end the education process of foresters and the general public should be changed. The foresters should be given a more holistic education to be able to resolve ecological priorities, economic imperatives and social values to enable overall forest management. To assist forest managers specifically and corporate and government managers in general, the public school system should include an ecological education to build the resource stewardship ethic required for sustainable development.

In the past five years, higher levels of mechanization and automation have reduced forest-related employment on Vancouver Island by one-third.

— Strategy for Survival 1984, p. 2

> Stewardship of public lands could become widespread. No forester I know of likes to manage the forest from a desk in a city office. They, too, prefer to be in the forest because they like the forest. And no one, much less the taxpayer, can afford to have government foresters spend most of their time driving down the road just to get to and from the forest. Under the stewardship concept each forester would be assigned a parcel of land, say perhaps 2000 acres (more or less depending on its productivity), to live on and caretake. Perhaps some areas might be leased to private foresters. In any case, the resident forest stewards would do all the necessary management prescriptions, lay out sales, compete with other forest managers, and, in short, be responsible for this land the same way a private forest owner is. This would allow foresters to become personally and intimately involved with their own pieces of land and would provide excellent stewardship of our forests.
>
> — Camp 1984

Research

Research is required to improve our understanding of the "real world". Specifically, research is required to understand the interrelationships of ecological diversity and genetic diversity; the interrelationships between the forest, the economy and the community systems; and research or management experiments into the decision-making process to find successful mechanisms for local input into the process.

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1. The following summaries are from the background paper prepared by Dansereau and Duffy 1988.

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SUSTAINABLE FISHERIES and CLEAN WATER: INSEPARABLE CONCERNS

Discussions about sustainable fisheries are inseparable from discussions regarding water quality and quantity. "Sustainable development requires that the adverse impacts on the quality of air, water, and other natural elements are minimized so as to sustain the ecosystem's overall integrity" (WCED 1987, p. 46). A sectoral approach to either fisheries or water management tends to exclude key components in policy decisions, therefore the two topics were combined in one workshop.

UNSUSTAINABLE VERSUS SUSTAINABLE MANAGEMENT PRACTICES [1]

FISHERIES

Many factors influence how fisheries are managed in British Columbia. The most significant include

- increasing demands on both the habitat and populations of fish;
- an increasing complexity of institutions and regulations for managing the resource; and
- an emerging awareness by resource managers and harvesters of gaps in our understanding of the environmental and socio-economic systems that are so intimately linked with the fisheries.

The result is that our treatment of the resource is both ecologically and socially destructive. This is evidenced by declining fisheries, predominantly as a result of over-fishing and gradual qualitative and quantitative deterioration of habitat; regulations which tend to be reactive and single-purpose; employment of sub-optimal modes of enhancement; and polarization of opinions among the various user groups on management priorities.

To maintain sustainable fisheries in British Columbia, a comprehensive management strategy, which encompasses the following criteria, needs to be implemented. The first criterion is to conserve plant and animal species, as stated in the World Conservation Strategy (IUCN 1980). Conservation can be achieved by preserving habitat for all species, protecting the populations of non-commercial species from depletion, and limiting the rate of harvesting of commercial species to allow continued survival of fish stocks. Resource vulnerability could be minimized through management strategies such as harvest cushions. Additional criteria would include integrating economic and ecological considerations in

> Fish in Vancouver harbour are in a sad state — with liver lesions and tumors, some with outright carcinoma. In plain language, cancer. At the eastern end of Burrard Inlet, around Ioco and Port Moody, 58.8 per cent of the English sole tested had such ailments. Lower levels of those conditions were found in other parts of the harbour, but none was immune.
>
> — Vancouver Sun 1989

> Protecting and managing fish habitat is an especially demanding responsibility on the Pacific coast because salmon depend on estuaries, rivers and streams that are subject to innumerable disturbances and pollution from industrial activities throughout the western watersheds. But our present knowledge about critical fish habitats, their potential productive capacities and the impact of other activities on them is seriously deficient. This impedes not only fisheries management but also effective planning of other resource development.
>
> — Peter Pearse 1982, p. 259

decision-making; minimizing adverse impacts from other resource users; and developing institutional structures for allowing the concerns and suggestions of user groups and affected communities to be incorporated into fisheries management decisions.

WATER

Human settlements, economic processes, and natural ecosystems all need assured water supplies to be sustainable. Currently, exponential population growth, combined with an increased reliance on toxic chemicals in agricultural and industrial production processes, have amplified negative impacts on water quality. In parts of the province, water intake is predicted to increase by approximately 83% by the year 2011. Tied to increased water demand is an increase in uncertainty concerning both the quality and quantity of water caused by factors outside of local control. Encouraging consumer conservation (demand management) as well as adequate enforcement may soon become a reality, as a way of reducing uncertainty.

QUESTIONS FOR DISCUSSION

The following questions were prepared by the Symposium organizers and included in the invitation to the Symposium.

In the context of ecologically sustainable yields, what are appropriate social and economic objectives for fisheries management in BC?

What policies would promote socially acceptable trade-offs between economically and biologically sustainable yields from BC fisheries?

Is the Salmonid Enhancement Program the most cost-effective approach to sustainable salmon fisheries?

Would the maintenance of fish habitat and water quality (e.g., through integrated resource management) be a viable step towards sustainable fisheries?

Is there a role for co-management (sharing of decision-making powers by government agencies and local user groups) in sustainable fisheries management?

Would territorially-based fisheries and property rights in fish stocks increase the incentives for sustainable use?

What is the impact of aquaculture on the sustainable development of wild fish stocks?

What specific water quality and other habitat preservation objectives are required to conserve fish stocks? How should they be enforced?

How should land, agriculture, forestry, and water management practices be changed to protect water quality and fish habitat?

How can we ensure that returns on water rental reflect its value without creating greater costs to society through increased inequity?

What is the best method to ensure maximum compliance with environmental legislation?

Given the almost certain conflicts over water use in the future, what planning processes will best incorporate demand-management, uncertainty, and the knowledge that there will always be regulatory offenders?

Government policies currently favour economic development over water protection and water use over conservation. In addition, the provincial government does not provide adequate funds to enforce

In 1985 the Washington legislature created the Puget Sound Water Quality Authority, giving it broad powers to coordinate efforts to assess and repair the state of that majestic but much abused resource. It has educated the public and the politicians, and given them blueprints for righting decades of past wrongs done to the environment.

It may well be time — perhaps long past time — that a similar cooperative approach was tried here. The politicians know what their constituents think: a poll conducted last summer for the federal government found that 82 per cent of Canadians thought that taking steps to improve water quality was extremely important.

And no one asked the fish.

— Vancouver Sun 1989

its own regulations. In this light, is the true social value of water expressed in current pricing policies; is the current management framework oriented to demand or supply management; and are enforcement and compliance of water-related environmental legislation adequate?

In general, a commitment to sustainable water use would include an integrated, proactive, socially-conscious water policy. Thus, environmental legislation needs to include environmental performance criteria such that water-use and waste discharge permits be allocated according to ecosystem carrying capacity limits. In addition, a coordinated decision-making process needs to be legislated both within and between resource sectors.

SUMMARY OF WORKSHOP DISCUSSION

The following points summarize the discussions in the Fisheries and Water Workshop. For clarity, the points are organized into three categories: substantive; procedural; and institutional issues.

SUBSTANTIVE ISSUES

General Issues

International concern is growing over local impacts (i.e., forestry) on common property resources (i.e., fish).

Why should people change their current views about the environment if they have not been presented with the evidence?

How can people be encouraged to change their perceptions and attitudes about sustainable development?

Vested interests and power brokers still have too much influence over policy.

It is difficult to get political and social commitment to change (that is, move towards sustainable development) and/or speed up the rate of change.

Resource-specific Issues

There is overfishing and degradation of habitat.

Fisheries management should be recognized as part of the larger context of water quality management.

People need to be aware of the range of management viewpoints: e.g., wild stocks versus stocks that have enhanced production; species-specific; management of non-commercial and commercial species.

Fish and water are "common property" resources because there is relatively open access to resources leading to user conflicts, differing value systems, and jurisdictional problems.

Economic Issues

Who pays for sustainable development?

Current view is that the environment is expendable when it comes to balancing the budget.

The environment has value beyond purely consumptive values.

Enforcement of regulations has a high cost.

> The resource comes FIRST. We must have the common sense of providing as best as we can for the future well being of the resource. Protection, regulation, and enhancement must be used to serve the interests of the resource and not those who make use of the resource.
>
> — Fishing Vessel Owners' Association of British Columbia, submission to the symposium, October 22, 1988.

> Development is about power and money, and it is plainly clear that most 'errors' made have been in the name of the abstract notions of growth, economic theory, resource exploitation, and material standard of living. These continue to be the currency of rationale in government and business...locations of power which are too frequently insensitive to the local ecological context. The notion of sustainable development is in great danger of being co-opted by economic status-quo interests, with little change in their activities. Decentralization of economic organizations and institutions is a necessary step.
>
> — *Don Reid, symposium participant*

Low priority is placed on funding for education and research in sustainable development, especially inter-disciplinary research.

Process and Institutional Issues

The government does not have a sustainable development mandate.

Political decision-making perspective is short term; however, issues are long term.

In the future, institutions will have to deal with greater uncertainties (e.g., climate change).

Can sustainable development become a mechanism to bring people together towards a shared goal?

B.C. is delaying the implementation of sustainable development.

PROCEDURAL ISSUES

General Issues

Co-management rarely includes corporate involvement. Therefore, co-management has an imbalanced mix of participants.

NGOs do not have the time and money to get involved in co-management.

With local decision making the following problems may arise:

- poorly coordinated decisions over a larger area (e.g., region or province);
- public may become conservative; and
- public at large is not accountable for its decision-making so how can decision-making authority be devolved to them?

Monitoring

There is no adequate model or framework to measure change and progress towards sustainable development.

We need to define what success is—implications for monitoring (e.g., state of environment reports).

Current information that is collected is not always meaningful or relevant.

Education

Government places a higher priority on"back to basics" education than on environmental education: need to give environmental education a higher priority.

Teachers have inadequate training regarding ecology and environmental awareness.

INSTITUTIONAL ISSUES

General

Native involvement in management needs to go beyond consultation.

Need to decide what is the best level for management—province, region, watershed.

Legislation

Jurisdictional systems currently overlap.

Some legislation is outmoded (e.g., BC Water Act does not recognize fishery as legitimate user of resource).

Some legislation is contradictory (e.g., BC Waste Management Act versus federal Fisheries Act).

Legal and Enforcement

Inadequate enforcement of existing regulations.

Legal processing time and costs are often prohibitive.

Poor understanding (by staff) of rules of evidence.

Burden of proof is on the injured party, not the polluter. This is onerous on the former group and should be reversed.

The legal system takes an adversarial approach.

There are not enough trained environ[illegible] lawyers.

WORKSHOP RECOMMENDATIONS

Education, Advertising, Communication and Information

Short term goals (1-3 years)

- Implement a public awareness program
    1. media advertising should identify the benefits of sustainable development for all parties
    2. measure the effectiveness and efficiency of the program to assess how well we are doing
- Publicize success and failure stories
    1. good corporate citizens awards
    2. introduction of the Salmonid Enhancement Program education package into the schools
- Target the specific agent of change (eg. teachers)
- Allocate funds dedicated to promotion of sustainable development

Long term goals (+3 years)

- Develop appropriate information systems and research techniques (eg. sensitivity analysis, identification of synergistic effects) to support a State of the Environment Report
- Develop an education policy regarding sustainable development. Establish an environmental education curriculum.
- Develop and interdisciplinary approach to resource management issues
- Develop and promote alternative models of success by examining our value systems and redefining achievement

> Perhaps the most pressing question within the fishing industry is that of the settlement of aboriginal claims. Certainly settlement of these claims should be the first priority in any attempt to put a sustained development plan in place.
>
> — Henry Frew, submission to the symposium

Public Participation and Co-Management of Resources

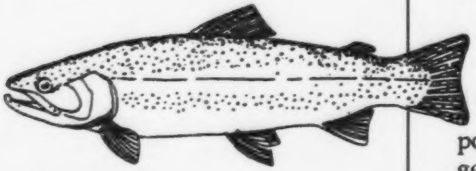
- Achieve consensus decision making:
    1. emphasize learning and dissemination of information
    2. avoid recourse to the courts and other adversarial approaches
- Ensure decision making at federal and provincial levels fosters sustainable development:
    1. establish advisory boards at the ministerial level and/or use a Royal Commission of Inquiry
    2. establish an inter-sectoral co-ordination process for all stakeholders (ie. government, industry, community)
    3. provide opportunities for public participation in hearings or other legislative committees that deal with integrated resource management
    4. include stakeholders in pre-budget discussions regarding taxes and subsidies to the resource sectors
    5. provide funding for public interest groups and academic research (eg. centres of excellence)
- Decentralize decision making to communities (eg. watershed level) to capitalize on local knowledge, interest and responsibility required for sustainable development:
    1. create opportunities for co-management of resources
    2. promote stewardship for specific resource stocks through user group agreements
    3. encourage local responsibility for water or fisheries management through investment in restoration or enhancement of stocks and future sustainable development

Political Will

- Establish government commitment to political and social change:
    1. formally adopt the Brundtland Commission recommendations
    2. institute policies that support sustainable development (eg. establish a Commission on sustainable development, provide tax incentives for compliance, establish and Environmental Bill of Rights)
    3. address Native land claims

Administrative initiative

- Promote government as a vehicle for sustainable development:
    1. clarify mandate of government and its agencies
    2. enforce the accountability of the bureaucracy and politicians through the use of standing committees, the auditor general or public watchdogs
    3. provide financial arrangements to support sustainable proposals



Legal system

- Review federal and provincial statutes to ensure that they are consistent with sustainable development criteria
- Clarify jurisdictional overlaps
- Ensure legislation and policy are consistent
- Improve training in environmental law
- Increase funding for enforcement and monitoring of environmental legislation and policy
- Examine costs and time
- Encourage mediation process
- Increase funding to advocacy groups

Possible Useful Market Mechanisms

- Pricing schedules that encourage sustainable development
- Privatization of salmon hatcheries
- Commercialization: increase profits from crown held resources
- Develop sustainable development criteria to guide investment

ENDNOTE

1. The informationin the introductory section of the chapter is from Brownlee 1988 and Dansereau 1988.

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NON-RENEWABLE RESOURCES

Hydrocarbons are the primary source of energy in industrialized countries.[1] However, the combustion of fossil fuels contributes to acid rain and to the accumulation of carbon dioxide in the atmosphere which is considered partially responsible for the increase in global temperatures. These trends could lead to catastrophic changes in world climate, agricultural productivity, sea levels, and settlement patterns. Similarly, mineral resources are essential to society; however, the processes used to mine them threaten local water quality, pose serious health threats and reduce the value of wilderness for recreation. Finally, continued reliance on non-renewable resources will eventually lead to depletion of the resource base.

IS THE USE OF FINITE RESOURCES SUSTAINABLE?

Current patterns of non-renewable resource use are not sustainable for two reasons:

1) non-renewable resources are being used as if available quantities were infinite;

2) the extraction, processing, use and disposal of non-renewable resources results in excessive adverse impacts on the biosphere.

CRITERIA FOR SUSTAINABLE USE OF NON-RENEWABLE RESOURCES

Sustainable patterns of non-renewable resource use involve three key practices: conservation, recycling, and integrated resource management. Conservation entails reducing individual consumption of resources through more efficient use and replacement with renewable resources. Recycling means reusing products and reprocessing materials so that they remain in the stock of capital. Integrated resource management provides decision-makers with opportunities to assess the priorities for resource use and resolve conflicts between differing resource uses.

OPPORTUNITIES IN THE SUSTAINABLE USE OF NON-RENEWABLE RESOURCES

There are opportunities for economic re-development in the area of non-renewable resource use through:

1) more material and energy efficient designs in vehicles, appliances and housing;

2) economic diversity in energy production; and

> Concerned that its new coal-burning power plant in Connecticut will add to the global trend toward a warming of the atmosphere around the globe, an electric utility (Applied Energy Services of Arlington) has come up with an unusual response: it will pay to have trees planted in Guatemala.
>
> The idea is that trees, 52 million of them, will do battle with carbon dioxide, the principal gas implicated in the warming of the globe, as though it were in a greenhouse.
>
> — Shabekoff 1988

> Conservation is to be viewed as one of several goals encompassed by an overall *materials policy*...The three basic elements of such a policy would be *resource recovery programmes* (materials/ energy recycling in various forms); *residuals management* (pollution control targets, instruments and institutions); and *waste reduction policies* (including low and non-waste technologies, product design and durability measures).
>
> — Turner 1988, p.12

3) expansion of some industrial sectors such as waste management, recycling, and advances in renewable sources of materials.

SUGGESTED POLICES TO ENCOURAGE SUSTAINABLE USE OF NON-RENEWABLE RESOURCES

Shift subsidies from non-renewable energy development to the development of renewable energy technologies.

Allow scrap dealers and renewable energy industries the equivalent of resource depletion and accelerated depreciation allowances available to resource extraction industries under federal income tax rules.

Change the federal Excise Tax Act to remove tariffs on recyclable materials, facilitating the flow of these materials to places that will recycle them.

Remove the 12% excise tax on goods produced in Canada with recycled material. Recycled materials are being taxed twice under the current law.

Increase the provincial and federal royalty payments and severance taxes paid on resources extracted as the rate of extraction increases.

Institute a user pay principle for the full cost of municipal waste disposal.

WORKSHOP DISCUSSION

The following is a summary of the discussion in the Non-Renewable Resources workshop. Where possible, the issues have been identified by type (i.e., substantive, process or institutional) and by the general topic of discussion.

SUBSTANTIVE ISSUES

Definition Of Non-Renewable Resources

Non-renewable resources may be more accurately defined according to the time scale and feasibility of their renewal. For instance, though trees are considered a renewable resource, it is probably not feasible to consider some west coast old-growth forests as renewable since they are a unique biophysical resources. The same argument could hold for Niagara Falls or Mt. Robson.

Mineral resources are "renewable" on a geological time scale. However, non-renewable resources should be defined as resources which cannot be reproduced within a given management period (e.g., 100 years or some time frame that is appropriate in terms of human planning horizons).

The concept of non-renewable resources is complicated by two factors:

1. The resource may be so abundant that at the current rate of consumption there is no foreseeable danger of running out. The free market will treat these resources as renewable.

2. The resource is very abundant, but the cost to extract the resource using the current technology makes the resource inaccessible (e.g., copper can be found almost anywhere, including

The federal government's recent announcements of funding for Hibernia, the Vancouver Island natural gas pipeline, the Husky Heavy Oil Upgrader, and the OSLO oil sands projects amount to over $5 billion in subsidies to non-renewable energy projects. In contrast to that, the "Energy Efficiency and Diversity Initiative" has been allocated $253 million for the period April 1988 to March 1993.

— Kelly 1988

QUESTIONS FOR DISCUSSION

The following questions were prepared by the Symposium organizers and included in the invitation to the Symposium.

In light of the current atmospheric crisis, does it make sense to subsidize hydrocarbon development, as we do at present, rather than the development of renewable, non-polluting alternative fuels and solar energy?

How can the extraction and use of non-renewable resources be made compatible with the principles of sustainable development ?

Are nuclear energy and the related process of uranium mining sustainable?

What policies can be used to promote the conservation of non-renewable resources?

Is exploration and mining in parks compatible with sustainable development principles?

the oceans; however, current technology and costs limit the feasibility of extracting it).

The above factors indicate that there would be problems if we attempt to regulate the extraction of resources according to the time scale by which they are renewed.

Should high quality resources be conserved for future uses? Human inventiveness will find new uses for these resources. For instance, oil and gas may be more valuable as organic molecules in the future than as fuel.

Limits To Growth In The Use Of Non-Renewable Resources

Finite resources will not necessarily limit growth because it is assumed that the marketplace and technology will adapt to transcend apparent limits.

The more immediate limit to the use of non-renewable resources is not their finite quantity, but the impacts of their use on the environment and people. From this point of view, the rate of non-renewable resources consumption is not as important as the way in which they are used and disposed. The shorter term solution may be to restrict consumption, but the longer term solution may rest in changing the way we consume non-renewables.

Non-renewables are capital resources not income flows.

Non-renewable resources can be converted to renewable resources such as knowledge, research and development, financial capital, and trust funds.

Recycling, which extends the useful life of a non-renewable resource, depends on the relationship between worldwide prices for recycled products and the costs of waste disposal.

The ultimate non-renewable resource is species diversity. Some difficult political decisions will have to be made when the options for economic development are made clear.

INSTITUTIONAL AND PROCESS ISSUES

Social and cultural sustainability must also be considered in the development of non-renewable resources. For instance, of 39 projects in the Mine Development Review Process (MDRP), one half of them want to locate their workforce in Smithers. Does it make sense to delay some of these projects to provide long term stability for the community?

The financial viability of mining projects is sensitive to timing based on world market forces, therefore it is difficult to regulate a projects' rate of extraction, or the timing of it coming on-stream.

World market forces currently determine the rate of conservation of mineral resources.

The current minerals tenure system, related to compensation for exploration, poses problems for conserving minerals.

Since planning for future resource use is performed using current prices rather than considering the value those resources may have in the future, the value of those resources to future generations is probably underestimated.

From 1970 to 1980 in BC, natural gas processing contributed 38% of the sulphur oxides emitted in the province; primary metals production contributed 24% (Environment Canada, 1986a). Research in BC shows that vast regions of the Pacific Coast are even more sensitive to acid depositions than Eastern Canada.

— Urqhart 1988

Alternative mechanisms for managing the use of non-Renewable resources

Projects that are not cost effective in standard economic terms, but which incur lower environmental costs, should be encouraged through various methods (e.g., government subsidization, legislation, economic incentives such as license fees for waste disposal, improved enforcement of current regulations).

Trust funds (such as the Alberta Heritage Fund) could be better used to transform non-renewable resources into a "renewable" fiscal resource. Taxes on the extraction of non-renewable resources could be used to support regional economies and extend benefits to future generations. Funds could be used for conservation, repair of environmental damage, education, research and development in new technologies, economic diversification, and stabilization of the economy through "boom and bust" periods. Questions arise as to whether a government should be allowed to take the capital of a trust fund to pay current operating costs.

Consumers should be encouraged to use non-renewable resources more efficiently.

Existing regulations over extraction and disposal of non-renewable resources should be enforced.

The price structure of non-renewables should be changed.

Municipalities should refuse to collect wastes not separated for recycling.

The public should be educated to perceive the crisis situation and to understand the implications of non-renewable resource use.

The public should be provided with opportunities to participate in decisions about non-renewable resource use.

Legislated solutions should be considered such as removing some goods from production or restricting their use.

Government subsidies to non-renewable extraction industries should be eliminated.

Hydrocarbon exploration subsidies should be redirected to research and development in solar energy and alternate energy sources.

Retraining and relocation programs should be established for displaced workers in non-renewable resource industries.

An Environmental Bill of Rights should be enshrined in the Charter of Rights. Laws would then survive successive governments and be interpreted by the courts. The alternative is legislating environmental standards which require enforcement procedures.

From industry's perspective, society must establish standards by which it expects corporations and governments to operate. Corporations need a reasonably stable legislative environment in which to plan.

Due to time constraints the following issues with respect to decision making were identified but not discussed in depth by the workshop:

- sectoral boundaries
- allocation of resources to user groups

Landfills compete with more important uses for land, and threaten water quality with leachates. In BC, we currently produce over 2.1 million tonnes of solid waste per year, and a 28% increase is expected over the next 20 years.

— B.C. Ministry of Environment 1988, p.4

Pacific Gas and Electric Company in California, has found that generating a kilowatt hour of electricity from a new power plant costs seven times more than saving a kilowatt hour through conservation programs. Through grants and loans to its customers, the utility plans to avoid $5-7 billion in new generating capacity over the next decade.

— Zwicky 1988, p.10

B.C. Hydro expects to save $600-800 million by persuading customers to cut electricity use by five percent.

— *Globe and Mail*, 15 October 1988, p.A1

- local input of people involved
- consignment of tenure
- need for a well-defined decision making process with specific information, inputs and conclusions
- need for leadership

WORKSHOP RECOMMENDATIONS

DEFINITION

A non-renewable resource is one that cannot be reproduced through natural or cultural practices within a defined management period, 100 years for example. Therefore non-renewable resources include minerals, fossil fuels, organic energy sources, and unique biophysical phenomena.

THE DEVELOPMENT CONTEXT

Limits to utilization:

- Supply - Absolute amounts are finite but some sources range in quality: e.g., the difference between waste/resource/reserve ore is a function of the marketplace. Supply is further limited by the substitutability between resources, especially energy sources.
- Sinks - Externalities are associated with the inventory, extraction, use and disposal of non-renewables.

Of these two limits, sinks appear to be the major constraint on non-renewable resource use at present.

Both supply and sink constraints must be viewed in the context of:

- British Columbia —> Canada —> World
- utilization of resource interest vs. resource capital

MECHANISMS TO DEFINE AND BROADEN CHOICES

Socioeconomic Considerations: How to promote projects that may appear less cost effective in the short-term but are socially desirable in the long term.

As the degree of environmental degradation increases, the nature of the options for resource use correspondingly ranges from encouragement through coercion, to punitive measures.

- Public education: General awareness is needed to change present behaviour patterns and encourage recycling.
- Trust Funds: Present resource revenues could be diverted to trust funds to offset present environmental impacts or develop alternative technologies.
- Pricing Mechanisms (including discriminative costs, taxes, subsidies): There must be real alternatives to current technology to ensure that pricing mechanisms are non-regressive (e.g., there is an effective transit system to replace the use of private vehicles).
- Legislated Solutions: Standards, enforcement, progressive restrictions, and outright bans on certain products using non-renewable resources.

> It is possible to identify three conservation rules for realising an efficient use of natural environmental assets, i.e. for the sustainable use of environmental resources:
>
> *Conservation Rule One*: maintenance of the regenerative capacity of renewable resources, and avoidance of excessive pollution which could threaten biospherical waste assimilation capacities and life support systems.
>
> *Conservation Rule Two*: guidance of technological changes in an indicative planning process such that, wherever physically possible, switches from non-renewable to renewable resources (stock and flow variants) are fostered.
>
> *Conservation Rule Three*: utilisation of the growing body of scientific data on geological and geochemical processes in order to formulate a "phasing" policy for the use of non-renewable resources. In principle, the aim should be to move gradually over time from relatively scarce to more scarce resources. It makes no sense to talk about the sustainable use of a non-renewable resource (even with substantial recycling effort and use rates). Any positive rate of exploitation will eventually lead to exhaustion of the finite stock.
>
> — Turner 1988, p.13

- International Conventions: Agreements are needed at the international level to ensure fair competition.

Note: whatever mechanisms are chosen, the approach must be measured, with full consideration of the implications, particularly the impact on exports.

CONSIDERATION OF IMPACTS

- Assess the full array of environmental and community impacts, deal with problems of perception.
- Recognize and account for intangibles (Full Cost Accounting).

DECISION MAKING

Several important topics were raised for discussion but were not fully explored due to time constraints.

- Identify sectoral boundaries and establish integrative mechanisms.
- A theoretical decision-making process for resource use to address the following issues:
    - Inventory
    - Identification of impact and alternatives
    - Conflict resolution and resource management integration
    - Resource allocation with established rates of production
    - Consignment of tenure
    - Needs of any decision-making process
    - leadership: earn trust, integrate all players
    - real public consultation to build consensus
    - improved credibility of monitoring and enforcement
- Decision-making in the non-renewable resource sector is constrained by problems of inventory (cost and risk) and tenure (granted before decisions can be made on conflict resolution).

ENDNOTE

1. This introductory summary is from Urquhart 1988.

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SYMPOSIUM STATEMENT [1]

A major theme in the call for sustainable development is the perceived need for better "integration" of the human economy with the environment. Typically, the objective is "to promote environmentally sound economic growth and development, not to promote either economic growth or environmental protection in isolation" (CCREM 1987).

But few people appreciate the extent to which the economy and the environment are already functionally integrated through the massive exchange of material and energy. Indeed, this is the root of the problem. The economy treats the environment both as an infinite source of resources and as an unlimited sink for wastes.

The scale of this relationship has grown since the beginning of the industrial revolution so that today human beings have become the dominant species in all the world's major ecosystems (see Vitousek *et al.* 1986, 1987). In effect, **the economy and the biosphere have been inextricably merged into a single system**.

Unfortunately, the present environment-economy union is neither stable nor sustainable. While the productivity of the biosphere is limited, the industrial economies that draw upon it are based on continuous material growth. Inevitably, this leads to the over-exploitation of resources, pollution, and global climatic change that have begun to undermine both the structure of the biosphere and the ecosystem processes upon which the entire world system depends.

Clearly, the concept of "development" needs to be redefined if economic life is to be sustainable within ecological limits. Major changes in the kinds of technology and the economic assumptions driving development are essential if anticipated population growth and rising material expectations the world over are not to precipitate an irreversible ecological decline. In short, providing a secure and satisfying material future for eneryone demands that the quality of development change radically. This applies **particularly in developed countries** where a quarter of the world's people consume three quarters of the world's resources (WCED 1987). These latter considerations raise the issue of distributive equity. Any approach to sustainable development in an ecologically limited biosphere requires new mechanisms to ensure that the poor enjoy a fairer share of the world's resources.

This Symposium endorses this general assessment of the present dilemma. However, we submit that the policy implications of a serious aproach to sustainable development have yet significantly to influence macro-economic planning and regional development policy in Canada. The resolutions and recommendations of this Symposium are therefore intended to encourage the governments of British Columbia and Canada to begin the changes necessary to make sustainable development a reality.

ENDNOTE

1. On the closing day of the symposium, this symposium statement was endorsed by the full plenary session to introduce and precede the workshop recommendations. Those recommendations have been published in the appropriate chapters of this volume.

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The emergence of sustainable development upon the political horizon has been one of the more heartening events of the 1980s. Yet, as the Proceedings of this Symposium demonstrate, we are only just beginning to comprehend the profound social implications of a genuine commitment to sustainable development. Indeed, if the very notion of sustainable development is to have real meaning in our society, and not be reduced to a mere slogan surfaced or submerged for the sake of political convenience, then we face a tremendous challenge ahead in terms not only of planning, policy, research, and funding priorities, but also in terms of changing our values, lifestyles, and behaviour. If we are serious about leaving a healthy, sustainable world for our children and grandchildren, we had better start creating it now.

AFTERWORD

Symposium Organizers Receive American Planning Association Award

On May 1, 1989, at the annual conference of the American Planning Association in Atlanta, Georgia, the student organizers of "Planning for Sustainable Development" were honoured with one of two 1989 Student Project Awards in recognition of "their outstanding effort in promoting the concept of sustainable development." The American Institute of Certified Planners recognized the symposium as an excellent demonstration of the contribution of planning to contemporary issues.

Through the generosity of several sponsors, nine of the students (all who were able to go) attended the awards ceremony in Atlanta. The students also presented a one and a half hour workshop, informing the American planners about sustainable development and stressing the need for the American Planning Association and the US Government to join with other concerned nations in making a commitment to sustainable development.

We thank BC Hydro; Fletcher Challenge Canada Ltd.; Alcan; the UBC Faculty of Graduate Studies, the UBC Centre for Human Settlements, and the UBC Graduate Student Travel Fund; Coriolis Consulting Corporation; and the Planning Institute of British Columbia for making our presentation to the American Planning Association in Atlanta possible.

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SUSTAINABLE COMMUNITIES

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Planning for Sustainable Development

SYMPOSIUM AGENDA

FRIDAY EVENING, NOVEMBER 25

Instructional Resources Centre, UBC Campus

6:00 - 7:30	**Registration for Symposium** Lobby
7:30 - 8:30	**Keynote address - Stephen Lewis** Lecture Hall 2
8:30 - 9:00	**Questions**
9:00 -10:30	**Reception (wine & cheese)** Lower Lobby

SATURDAY, NOVEMBER 26

Instructional Resources Centre

8:00 - 8:45	**Registration continues** **Continental Breakfast available** Upper Lobby
8:45 - 9:15	**Plenary session: Introduction** Lecture Hall 4
9:15 - 9:30	**Workshops: Opening remarks** Seminar rooms: numbers are posted
9:30 -12:30	**Workshop sessions**
12:30 - 1:30	**Box Lunch provided**
1:30 - 5:00	**Workshop sessions**
6:30 - 7:00	**No-host Bar (optional)** Graduate Student Centre, across campus
7:00	**Dinner provided** Graduate Student Centre (Tickets required: see the registration desk)

SUNDAY MORNING, NOVEMBER 27

Instructional Resources Centre

8:30	**Breakfast provided** Lower Lobby
9:00 -12:30	**Plenary — presentations of results from workshops** Lecture Hall 2

Planning for Sustainable Development Symposium

ORDER FORM

Additional copies of the symposium background papers are available at a cost of $2.00 each. To order, please return this form and a cheque payable to the UNIVERSITY OF BRITISH COLUMBIA to:

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University of British Columbia
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# copies

_______ Defining Sustainable Development, by William E. Rees.

_______ Social Equity and Sustainable Development: Uncommon Future, by Mark Roseland.

_______ The Global Context for Sustainable Development, by William E. Rees.

_______ Climate Change: The Implications for British Columbia, by Dianna Colnett.

_______ Integrated Resource Management: One Solution to Current Management Problems, by Paul Graves and Titayanto Pieter.

_______ Sustainable Use of Water in B.C., by Claire Dansereau.

_______ Promoting Sustainable Development: Provincial Strategies, by Paul Nowlan and Arie Djoekardi.

_______ Economic Opportunities in Sustainable Development, by Jeffrey Barrons.

_______ Sustainable Development and Economic Opportunities, by Ramona Mattix.

_______ Planning Sustainable Communities, by Sharon Bailey.

_______ Planning for Tommorrow: The Role of Forestry in Sustainable Development, by Claire Dansereau and Dorli Duffy.

_______ B.C. Fisheries as a Sustainable Resource, by David Brownlee.

_______ Our Common Food: Planning for Sustainable Agriculture in B.C., by Tamara Hursin and Donna Sanford.

_______ Non-Renewable Resource Use: Fossil Fuels and Minerals, by Heather Urquhart.

Keynote Address by Stephen Lewis (1 hour)

_______ Videotape (specify __ VHS or __ Beta format) $19.00 ($17.00 if picked up from UBC)

_______ Audio cassette tape $4.00 ($3.00 if picked up from UBC)

Name ________________________________

Address ________________________________

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STATEMENTS FROM PARTICIPANTS

In the invitation sent to Symposium participants prior to the November event, invitees were encouraged to submit brief statements of their current views on the subject of their preferred workshop, as well as recommendations appropriate to that topic. We promised at that time that these statements would be published unedited in the Symposium proceedings. And so they are.

Sustainable development of British Columbia, if pursued with intent to adopt, will totally change the pattern of economic growth in this province. Unfortunately those who support the status quo have, until now, been able to discredit discussion of sustainable development owing to the publics lack of knowledge of the subject. These opponents of any move to sustainable development have a strong vested interest in maintaining the status quo and will continue to oppose such discussion.

While there are many programs and strategies we can adopt within the province we must also hold a position on proposed national and global policies which impact on our parochial efforts. In addition to a population density plan on a local, regional and provincial level, what numbers should we strive for nationally and globally? What controls, if any, would be beneficial or necessary to stabilize populations, not only on an international and national level, but on a provincial and regional level?

Currently our long term sustainable industries would be tourism, forestry, fisheries, agriculture. But to be sustainable on the long term, 50-100 years, all four industries need a complete re-think and a 50-plus year plan.

Considerable social disruption is to be expected as a result of a total sustainable development plan being put in place provincially. Negative effects of such disruption would have to be mitigated by government. More importantly it would have to be made clear to the populace that the sustainable development plan would not only improve the quality of life for them, their children and grandchildren, but would not severely handicap any individual in the process.

To put an all-embracing sustainable development plan in place in British Columbia will require a massive public education plan. Such an education plan would be necessary to supply the public with the tools they would need to make the attitude and value changes needed for change to be accomplished.

Henry L. Frew,
34785 McMillan Court,
Abbotsford, V2S 5W4

To the UBC Symposium on Planning for Sustainable Development, Nov. 25-27, 1988.
From Walt Taylor, Northwest Study Conference Society
Box 446, Smithers, B.C. V0J 2N0 (604)847-4948.

"One page" of views and recommendations for the workshop on
PROMOTING SUSTAINABLE DEVELOPMENT: PROVINCIAL STRATEGIES

This page will focus on question #7: "Should we be considering additional policies for wealth redistribution to begin narrowing the gap between rich and poor both within B.C. and internationally?" My answer is yes.

Two of the most obstinate obstacles to genuinely sustainable development are poverty and wealth. Poverty afflicts at least a quarter and, to a large extent, nearly half of the 5 billion people on earth. More than 450 million are starving. Poverty is unnecessary and therefore inexcusable.

On the other side of the vast and widening chasm between poor and rich people, an equally deadly illness has been given a name by John Levy of the Jung Institute. He reports that a growing number of privileged youths suffer from spiritual poverty, afflicted by "affluenza."

In regard to wealth, I recommend that we talk about this hidden disease. If we bring it right out of the closet we may be able to discuss without flinching both its potential contributions to sustainable development and also any possibility that unbridled wealth, like poverty, is unnecessary, inexcusable, and a serious threat to "the security, well-being, and very survival of the planet." (Our Common Future, page 343.)

Wealth is difficult to criticize because those who have it want more and those who lack it want some. Without considerable analysis, its attractions are seductive and its dangers seem too controversial for easy discussion. Critics of excessive wealth tend to be scorned as "radicals" even though they may, in fact, be digging down into one important root (radix in Latin) of unsustainable development.

In regard to the hungry side of the gap, we have no trouble condemning poverty. Everyone deplores poverty. With that universal consensus, I recommend specific action to begin eliminating poverty.

Abstract for a draft Action Plan Toward Sustainable Development in B.C.

1. Inventory of Urgently Needed Work.

Identify and document all the challenging work that needs to be done to achieve sustainable development on earth. Prepare a loose-leaf inventory which can be revised and brought up to date year after year with increasing international participation through the United Nations and the Centre for Our Common Future now in Geneva. Work that could appropriately be undertaken in B.C. will be classified as such.

2. Invent-ory for the Resources Required to Support Necessary Work.

The work will fall into two categories: (1) beneficial-and-profitable; and (2) beneficial-but-expensive-rather-than-profitable. For examples: in the first category there could be the production of tools for sustainable, wholistic forestry; and the second category would include the costly but necessary work of restoring plundered forests and polluted air, water and soil to long-range health.

The task of the Invent-ory (accent on vent) will be to invent the necessary resources to provide start-up funding for profitable enterprises and to enable workers in non-profit enterprises to earn a living by doing the life-sustaining work for survival and a higher quality of life in our common future.

3. Implementation: Putting Work and Workers Together.

A network of coordinating facilities throughout B.C. will make it possible for two serious problems to solve each other: (1) unemployment; and (2) the severe shortage of workers who are paid to do the work that is so urgently needed for our sustainable common future.

ECONOMIC OPPORTUNITIES FOR SUSTAINABLE DEVELOPMENT WORKSHOP

A CASEBOOK CHALLENGE ?

In the face of 1987, the Federal Government released a report entitled "Hydrogen - National Mission for Canada". The general theme of this report was that sooner or later the world would have to obtain a very large percentage of its energy (especially motive energy) from hydrogen. There were two general reasons for this: the reduction in the supply of hydrocarbon or non-renewable energy sources, and the pollution issues of smog and the greenhouse effect. Canada, said the report, should become a leader in the new "hydrogen economy".

Then along comes the Brundtland-based notion that the world must reduce fossil-fuel use by 20% in 20 years, or the South East Air Quality Management District observing that even with all known conservation measures, simple population growth for the next 20 years in the Los Angeles basin will put all regional air pollution targets completely out of reach.

The challenge is this: if we accept that the pollution issues are life-threatening (and the scientific evidence is disturbingly corroborative), how does one get around the problem that there is no visible end to the supply of hydrocarbons? In fact, were it not for artificial price-fixing, the cost of hydrocarbons would be even less than it is now.

Furthermore, there is an entrenched, very large industry which will resist this change with great vigor. There are huge investments in fixed plants, wells, transportation (boats, pipelines) and distribution, all only partly amortized. This industry is so powerful that our own government wants to invest billions in facilities like Hibernia or Lloydminster which are not only non-economic but ecologically obsolete.

It's facile to believe that political leaders can induce substitution by way of higher user taxes - they might have real trouble staying elected. So, consider a real-life case of a technical solution - a new type of engine which uses hydrogen, and which is not an outgrowth of any other type of powerplant. How does the world ever get to use the new device?

The costs of the hydrocarbon energy-conversion devices (the internal-combustion heat engine) have fallen through the most sophisticated mass volume manufacturing of all time. We accept this as entirely normal. But how does it ever get to the volumes required for massive cost reduction without being sold at the prices which reflect that cost-reduction?

On a broader scale, if the hydrogen economy is one appropriate goal of a hypothetical National Economic Policy, how should the tactics of that policy cope with changes which:

(a) are counter to the real supply situation of the competitor?

(b) are opposed by the largest industry in the world?

(c) require some form of politically unacceptable artificial structure to be price competitive?

Michael J. Brown
November 17, 1988

PLANNING SUSTAINABLE COMMUNITIES WORKSHOP

After what was a very wide ranging discussion, the following definition was accepted as a summary of our group's description of a generic sustainable community:

A sustainable community is a settlement which:

1. has a stable, healthy population
2. understands that humans are only one of many life forms which share a sustainable region
3. is a population with a strong sense of place, history, and global responsibility
4. is empowered to guide an ecologically regulated economy based on the sustainable harvest and conservation of local natural resources
5. shares both its surplus production and culture with other communities and regions
6. has a collective ethic of conserving its culture and natural resources for future generations
7. does not export pollution to other regions
8. does not base its affluence on the draining of other regions of their resources
9. reduces to a minimum income leakages which leave the community
10. gains fullest possible value from harvest and manufacturing of natural resources through use of locally controlled and adapted appropriate technologies
11. is committed to the goal of providing equal opportunity for a high quality of life for all residents of the community
12. is a population which strives to continuously learn of its changing needs through the passage of time.

Doug Aberley
Sustainable Communities I

Planning Sustainable Communities

A preliminary position statement to
A Symposium on Planning for Sustainable Development
UBC Nov 88

I am a professional who has deliberately eschewed the urban opportunities to make a commitment to a rural community.

It is at the level of the community that sustainable development will have to be carried out:

1. It is at the community level that the individual is involved in economic activity.
2. It is at the community level that the knowledge of the environment and the influences of economic activity upon it are known.
3. It is at the community level that the imperative for sustainability on an economic, social, and spiritual basis is felt.
4. It is at the community level that a social memory exists which can learn from mistakes and respond quickly to faulty decisions or changes in conditions.

Decision making powers over the management of resources must be given to regional and community authorities directly responsible to community residents. These authorities must, of course, function within a framework of national and provincial legislation which ensures that minimum standards are met and that the interests of the province and nation as a whole are protected.

Trevor Chandler
Lillooet, B.C.

PIBC

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"PLANNING FOR SUSTAINABLE DEVELOPMENT"

NOVEMBER 25th - 27th, 1988

Planning Sustainable Communities

"Our Common Future", the report of the World Commission on Environment and Development, issues a challenge to drastically change our ways to ensure our survival. A sustainable community is one that meets the needs of the present without comprising the ability of future generations to meet their own needs. A sustainable community is developed within biophysical limitations and recognizes social equity objectives. What can planners in municipalities and regional districts in British Columbia do to meet this challenge, recognizing that it is the senior levels of governments who have control over policies on natural resources, trade agreements and employment?

First we should recognize that when the distribution of responsibilities among the various levels of government was established in Canada in 1867, the majority of Canadians did not live in cities. Urban residents today are not directly involved in resource extraction, and the issues for local governments are more related to how people consume resources. To re-orient British Columbia's direction to one of sustainability, local governments will need different legislative powers and will need to use their existing powers in new ways to ensure wise use of resources. Some examples will be presented of areas where changes or new thinking may be necessary.

Most municipalities in British Columbia have Official Community Plans to guide land use development and many are preparing economic development strategies. These documents provide the opportunity to set goals which are consistent with sustainability in terms of protection of natural environments, maintenance of agriculture, ensuring job locations close to homes, and establishing community population limits based on ecological impact. Local governments should set parameters and ensure that new development is achieved within this framework!

Through the land use control process, local governments can require that proposals for developments identify impacts and mitigation measures for a broader range of issues including the carrying capacities of the site, hydrology, atmospheric conditions, local and regional transportation, etc.

In the area of energy, we know Canadians are the world highest users on a per capita basis and second to the United States in petroleum use. Transportation consumes 40% of all energy used annually. Cars use more non-renewable energy than public transit and significant contribute to air pollution. Taxes could be levied on polluting vehicles to discourage private car use and pay for public transit. Local governments can ensure that vehicles are tested for harmful emissions, road building is balanced by public transit, bicycle and pedestrian paths, are provided and that municipal and car fleets use alternative fuels only.

Waste management, both liquid and solid, is a local government responsibility and studies have shown that of the 2 million tonnes of solid refuse production in B.C. annually, two-thirds can be recycled, composed or burned for energy. In Ontario 70 - 80% of households are willing to segregate their waste if they are assured it will be recycled. Curbside recycling has been started in several B.C. municipalities and should be adapted by others. Local governments should set examples and provide incentives for residents and businesses alike to recycle.

Local governments have a responsibility to reduce social and economic inequities and can use their financial resources to assist in provision of adequate community services and affordable housing. Grants can be provided to organizations that support sustainable development principles, for example, environmental enhancement and community self help.

Finally local governments can play a major role in increasing public awareness by encouraging discussions on the principles of sustainable development. Efforts should be made to translate these principles into specific actions by municipal staff, schools, the business community and residents. Local governments can also effectively lobby senior governments to change policies to ensure sustainability.

Jill Davidson

Jill Davidson, MCIP
President

JED:sv

PLANNING SUSTAINABLE COMMUNITIES WORKSHOP

Sustainable communities embody a form of development that combines compactness, infill and revitalization, a hierarchy of wide transportation options, mixed use, affordable housing, energy conservation, a local employment base, local energy and food production within the community, and recycling of water and wastes.
Sustainability implies a balance "between people living in a community and the jobs available there: between renewable resources continuously available locally and local consumption patterns; between maintaining the natural environment in good health and the need of the human community living within it" (Vander Ryn 1986,55).

A sustainable community would be shaped by the reduction in the availability of the cheap energy which has made possible current city forms (Urban Environment Sub-committee 1988). It would have established an optimum population range and would gradually adjust the economy of the community to that range. It would promote renewable energy sources within its boundaries. It would promote recycling and resource husbandry including the conservation of open lands. It would take measures to increase the biological resiliency of its urban ecosystem. A sustainable community would also increase awareness of the non-fiscal costs of pollution and require reporting of the public and private monetary costs of pollution (Baldwin 1982).

Self-reliance would be the watchword of the community. For example, on-site food production would create jobs, reduce energy consumption for food transportation and enliven the physical environment. Encouraging citizens to monitor their own environments is another example of self-reliance. Economic diversity is essential for community self-reliance (Wismer 1988).

Noelle Reeve

Excerpts from "Sustainable Development in Municipalities: Making it Work" A Position Paper of the Forum for Planning Action, November 1988.
Complete paper is available from the Forum for Planning Action, 4414 MPO, Vancouver, B.C. V6B 3Z8

PLANNING SUSTAINABLE COMMUNITIES WORKSHOP

A Perspective from a Nuu-chah-nulth on Planning Sustainable Communities

I. Summary

To obtain a true meaning and feeling of a Planned Sustainable Community, todays society has to stop looking all over the world for the Answers and Solutions. Instead, what it has to do is look right in their own backyards and see what we as Nuu-chah-nulth have done in our Hereditary Chiefs Hahoulthe.

II. The Philosophy

Breaking "Laws of Nature" is condemning something to extinction in the "Chain of Life".

III. Introduction

This philosophy from our elders and ancestors forms the foundation of a Planned Sustainable Community. This means using common sense and working in conjunction with nature when planning Sustainable Communities.

In order for todays society to create a successful Planned Sustainable Community, society will have to look at Nuu-chah-nulth history, culture, and traditions and practices, and find out how they managed to survive for thousands of years before European contact.

The authors of this philosophy, our elders and ancestors, were the original practitioners of Planned Sustainable Communities. This type of planning is evident by the location of our current and historical reserves. Even though our ancestors were semi-nomadic, our people worked with nature when selecting sites for their communities. They made sure it was a self-sustaining site by ensuring all their needs and sustenance requirements were available and accessible. Our present and historical reserves have these things in common: access and availability of water, seafoods, game, berries, fruits, rivers, and streams for fish, foreshore and riparian access, firewood and cedar for shelter and buildings, clean air, and clean environment. We are truly practitioners of Planned Sustainable Communities.

IV. Principles

One of the principles of a Planned Sustainable Community is to work with nature rather than against it. Working in conjunction with Nature requires strict adherence to the use of common sense. The principle of a balanced ecology is most important so that the environment around a Planned Sustainable Community can be healthy and productive, and so it can provide a quality of life that can be enjoyed by all its inhabitants.

V. Elements

What made a Planned Sustainable Community should not be hard to answer if one studies critically the historical communities of the Nuu-chah-nulth. The historical Nuu-chah-nulth communities, before European contact, were not just the little itty bitty pieces of land that the Federal Government has set aside for the Nuu-chah-nulth called Indian Reservations.

Nuu-chah-nulth Planned Sustainable Communities, for a reason, started from the mountain tops, took in valleys, water sheds, river estuaries, and continued out to beaches, foreshores, reefs, and deepseas. This is what we as Nuu-chah-nulth refer to as "Hahoulthe". This word will be explained at the summation of this paper.

Our Nuu-chah-nulth ancestors paid close attention to their total surroundings and greatly respected a balanced ecology and a clean environment. It is time to examine an earlier statement where our ancestors had reasons for starting their Planned Sustainable Communities from the mountain tops and continued on out to the deep seas.

Mountains:
From the mountains came our clean drinking water from run-off of the snow packs. The mountains also sheltered the big game & small animals that our people relied on for food, and skins for clothing. The shelter and housing also came from these mountains for it produced the best cedars for housing, and for our transportation, the best built canoes came from high up in the mountains. The most important use of a mountain to our ancestors was to communicate with the Creator. There are to this day in Nuu-chah-nulth areas, places of spiritual significance still treasured and used by some of our people.

Valleys:
The valleys adjacent to many of our current reserves served as our deep freeze for this is where our ancestors hunted game birds, and gathered berries, roots, and herbs to nourish and feed their families and extended families. Also in these valleys the fur bearing animals were snared to supply the families with clothing and food. The nearby valleys were also a source of fuel for the households, for this is where they obtained their fire wood.

Watersheds:
Watersheds were very important to a Planned Sustainable Community in that they supplied our early communities with a source of clean drinking water. These watersheds were also the home of small game and fur bearing animals which were important to our people.

River Estuaries:
River estuaries were very important to our people for this is where communities were placed for many reasons, most of all for accessibility to transportation, fish and protection from weather and storms. Estuaries also provided a food source in water fowl and other types of birds.

Beaches, Reefs, and Deepseas:
This, although not any more important than other Elements of A Planned Sustainable Community, was very crucial to a Nuu-chah-nulth way of life. The beaches, reefs, and deepseas supplied what was our staple diet of seafoods, fish and all kinds, clams, and all kinds of shellfish. The seas provided a mode of transportation because the Nuu-chah-nulth were famous for ocean going canoes, depicted as Nootka canoes.

VI. Administration & Jurisdiction

The administration and jurisdiction of the Planned Sustainable Communities was in total control and sovereignty of a Hereditary Chief and his sub-Chiefs. This the Nuu-chah-nulth called Hahoulthe. In a chiefs Hahoulthe it meant that he could set policies and have total control and jurisdiction over his lands and would manage and take conservation measures in conjunction with nature. The administration within a Hereditary Chiefs Hahoulthe was carried on by specialists of our time, which is comparable to police today which the Nuu-chah-nulth called Whet-Wock. The ultimate enforcer in our society to look after a Hereditary Chief's Hahoulthe was the Head Wolf who had powers that even superceded the head Hereditary Chief. This is how our ancestors administered his Planned Sustainable Community.

VII. Conclusion

It goes without saying the Nuu-chah-nulth have practised living in a Planned Sustainable Community which our elders and ancestors called Hahoulthe.

Note: Hahoulthe, for clarity of understanding can be best described in an analogy of a Tree Farm License. Forest companies have total and absolute control & jurisdiction of huge tracts of lands and can do virtually anything they want to within the boundaries of the Tree Farm License. This is what our hereditary Chiefs did in their Hahoulthe. The major difference was our ancestors worked with nature rather than against it.

Chief Earl J. Smith

Raymon Torchinsky, Ph.D

Consultant

Spatial Analysis / Transportation Planning / Location Analysis

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October 28, 1988

Dr. William E. Rees
School of Community and Regional Planning
6333 Memorial Road
Vancouver, B.C.

Dear Dr. Rees;

I have been asked to participate in the symposium on "Planning for Sustainable Development" on behalf of the Social Planning and Research Council of B.C., and I am looking forward to attending this conference.

Following your request, I would like to make some brief comments on the content of the workshop that I will be attending:

The proposed outline of the Planning Sustainable Communities workshop indicates that the discussion will focus on strategies to incorporate sustainability as a development goal at the community level. Specifically, changes to the institutional and policy framework underlying the current planning process will be required; the workshop will investigate some of the alternative approaches. My view is that this topic could be discussed with respect to three organizing principles:

a) The first is based on spatial scale. The workshop outline incorporates this idea, and makes specific mention of a number of detailed concerns. I think there are two important issues to consider with regard to spatial aspects of the planning process. The first involves the appropriate spatial context in which to define sustainable development; for example, should a community be able to over-ride provincial or national objectives for the purpose of conserving local or regional environmental and social values? The second is to determine the appropriate scale at which to implement sustainable development.

b) The second is based on temporal scale. This factor is not mentioned in the outline, but I feel that it is crucial when discussing the issue of sustainability. For example, the role of long-range planning as a means of defining development goals and ensuring compatibility of sequential development projects should be formally recognized in the planning process. The planning horizon is of greatest importance in the urban context, where the inter-relationships between factors such as land-use, density, transportation infrastructure, etc. mean that short-term or project-specific planning cannot adequately reconcile immediate economic impacts of development with principles of environmental protection or maintenance of social standards.

c) The third is concerned with the role of community-based interest groups in the planning process. An emphasis on planning for sustainability implies that difficult trade-offs must be made between development and conservation interests. To what degree are bottom-up rather than top-down planning processes desirable or feasible?

I hope that these points may be of some assistance to you. I would like to thank you for inviting our organization to the symposium, and please feel free to contact me for any further information you may require.

Sincerely,

Raymon Torchinsky

Agriculture

Much of the land which the agricultural industry views as key farmland the forest industry sees as prime land to be planted in trees. Few people not involved in one or other of these two industries understand this competition. This is one more example where public involvement in a long term plan, 50-years and more, is crucial with integrated resource management being a key ingredient of a sustainable natural resource use policy.

With the development of a sustainable economy and sustainable use of our natural resources it is an integral part of such a plan that the goal of agriculture be self-sufficiency in food production, this being achieved through a balance of agricultural trade. Any other goal leaves us open to continued alienation of farmland with the ultimate possibility of being held to ransom for our food supply.

Despite the claims of agribusiness it can be argued that the most cost efficient means of agricultural production is the family farm. A sustainable agriculture policy should nurture the family farm but also strictly control how and what a family farm may borrow capital on.

Education of the public to the needs of a sustainable agriculture is essential. Part of this education process should be a clear reflection of the cost of local production of food. Poor people would be helped to cope with food costs through other programs.

In the Fraser Valley, where so much of the production could come from, large tracts of top quality land is already split into two-ten acre parcels. Taxation of these small acreages should show clear commitment to food production, with steadily increasing taxation being applied to those who consistently use agricultural land solely for amenity value. This would apply province wide, not solely to the Fraser Valley.

Taxation, lack of protection and land costs are among the three main factors which force farmers into the excessive use of chemicals, monoculture and other poor farming practices. Sustainable agriculture is achievable if the people of this province, and nation, want it to happen.

Henry L. Frew,
34785 McMillan Court,
Abbotsford, V2S 5W4

MY VIEWS ON THE AGRICULTURE ISSUE IN B.C.

There continues to be two opposing opinions on the need to protect the remaining B.C. farm lands. On one side, there is a cry to save every acre of farm land for future food production when our outside sources disappear. The other theory portrays self-sufficiency in food through improved techniques of growing, in particular, the advent of greenhouse crops which produce year-round and do not necessarily require location on agriculture land.

It is my opinion that most farm land is being under-utilized for agricultural purposes now.

Substantial increases in food production are possible in B.C. mainly through intensive, large scale, factory-like developments. These industries will not be dependent on farm locations, but may occur in cities or on poor terrain. The climate will be artificially controlled for year-round growing.

Should this occur without increased use of farm land, there is bound to be increasing pressure not only from the development community to get at these lands, but from the existing farmers themselves who see their way of making a living becoming more and more difficult.

On the other hand, I would not advocate the wholesale removal of these lands from the A.L.R. for urban uses as this would reduce the livability of our existing urban community. This is highly controversial in Richmond at this time; the issue being not whether we need the farm land so much for farming but as a greenbelt for urban residents.

Ron Mann

Director of Planning
Corporation of the Township of Richmond

WALTER RIEMANN B.Sc. (Ag.)

Economic Factors in Planning for Sustainable Agricultural Development in British Columbia: A Statement For Further Discussion

When considering the sustainability of the existing food system in British Columbia I assume that in the long-run it is not sustainable in its present form (current methods of production and consumption erode the resources). Therefore a need exists to transform the system to attain sustainability. In the context of the threats facing our global village within the next decades as stated in Our Common Future I understand the creation of a sustainable food system to depend on both food producers and consumers.

From the perspective of an economist, I look ahead to methods of transforming the existing system and to the opportunities provided to B.C. agricultural producers by this challenge to change.

To adjust current production and consumption methods so that they contribute to the sustainability of society and the environment the set of optimization criteria of individual farmers, processors and consumers needs to change. These criteria include, for example, the relative availability of resources, the value of resources, the product prices and the individuals' expectations as to when and for how long they want to enjoy the benefits of their activities.

The externalities (side effects), occur often as damages to our common environment, which are created by individuals acting to optimize their own situation given their set of criteria. They need to be internalized into the set of criteria, i.e. to become "costs" to the individual producer, processor or consumer. One way of doing this is the creation and enforcement of regulations.

For example, market prices are only limited in their ability to signal consumers' environmental quality demands, because information causally relating externalities to specific food products is imperfect and consumers may lack concern for the environment themselves. Good laws or regulations as non-market signals reflect the common values of society and should serve as common standards for both producers and consumers.

In addition to the need to change there is a monetary incentive for producers to do so. B.C. food producers have to recognize a clear trend in consumer demand for more "healthy foods" and no less for "environmentally sound production methods".

Markets for food will change. Already, in a limited market premium prices are presently being received by producers of what are called organically-grown food products. This premium can offset the additional costs or lower yields of sustainable production methods.

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SYMPOSIUM: PLANNING FOR SUSTAINABLE DEVELOPMENT

SUPPLEMENTARY COMMENT - AGRICULTURAL WORKSHOP

The concluding statement of the Agricultural Workshop includes a set of principles aimed at ensuring sustainable agriculture. The development of this statement followed a lengthy discussion of the Provincial agricultural land preservation program. Reflecting upon the Workshop's discussion, Mr. Ron Bertrand, Director, Soils and Engineering Branch, Ministry of Agriculture and Fisheries, stated during the final plenary session that 'preserving our agricultural resource base is the cornerstone of sustainable agriculture.'

Also considered by the Workshop was the role of local governments in sustaining agriculture. Within B.C. there are 145 local jurisdictions (cities, towns, etc.) and 29 regional districts. All regional districts and 98 municipalities have land within the ALR. The Agricultural Land Commission actively promotes the concept of a partnership between the Province and local governments to ensure the preservation of agricultural land. It is critical that policy consistency be achieved between all levels of government if uncertainty regarding agricultural land is to be thwarted. Yet, these efforts, at best, have been only partially successful.

The first major report of the Lower Mainland Regional Planning Board was *The Lower Mainland Looks Ahead* written in 1952. It stated that, "in allocating areas for residential use, we must try to keep away from our best agricultural land." This "must try" attitude continues to endure. In 1988 a B.C. municipality suggested that agriculture should exist, but only, "..within the bounds of required urban development.". Both statements lack the emphasis of 'ensuring indefinitely' the preservation of the resource base.

While there are exceptions, there remains a persistent attitude that the ALR is little more than an urban/industrial/open space recreation land bank. Despite rhetoric to the contrary, official community plans all too often contribute to the planned obsolescence of the agricultural resource. Continued urban growth, not sustainable agriculture, is the dominant policy objective. However, if sustainable agriculture is to be achieved, a fundamental shift in attitudes amongst municipal leaders must be followed by new policy directions emerging within local government planning documents. This will demand:

1. a rigorous effort to limit urban growth and associated land uses within individual municipalities to non-agricultural alternatives and/or the re-development of existing urban areas, and in some cases land use policies must prepare communities for an inevitable limiting of growth;

2. renewed efforts to develop strategies and accommodate growth in a regional context;

3. the planning for land use change at any location in a municipality in a manner that considers potential impacts on agriculture; and

4. the planning for urban land use along the urban/rural interface that supports sustaining agriculture rather than contributing to its encroachment or the heightening of land use conflict.

The ALR, while all too often viewed only as a hinderance to growth, should act as a catalyst for well managed regional development and the basis upon which sustainable agriculture rests.

B.E. Smith, Planning Officer - Agricultural Land Commission

AGRICULTURE WORKSHOP

"There is something seriously wrong with a society that requires one to argue for sustainability. It is obvious that our food producing systems must be operated in a sustainable way, for to do otherwise would be to practice delayed genocide on future generations." - Stuart B. Hill, Ecological Agriculture Project, McDonald College, McGill University.

"What is the "organic" agriculture movement in western Canada doing to prevent that delayed genocide?

"The alteration of living ecosystems to provide food and fibre for humankind offers the greatest potential both for environmental degradation and for learning to work with natural forces to achieve the satisfaction of our needs with minimal impact on the environment...

"Organic pest management is achieved by diversifying the plant complex to increase the complexity of insect population and so more closely approximate the natural balance. When necessary, predator populations are augmented, target-specific bacteria and viral organisms are released into the environment, or the offending insect is manually removed and destroyed. Similarly, vegetation management takes the form of mechanical removal of unwanted growth by hand, machine or animals compatible with the crop being grown.

"The organic farmers who follow these practices do so in the knowledge that they are not dominant but equal to the species which they manipulate. The goal is not one of strict regimentation or eradication of any species but a willingness to live in harmony with the fluctuating balance which is inseparable from any life system. In practical terms this is translated into an attitude of stewardship of the land for which the farmer is responsible; together with the knowledge that future generations will also be dependent on this land to provide themselves with nourishment...

Agriculture plays a part in every aspect of our lives: our health, our social structure, the environment and our overall perception of nature and life. When we emphasize the development of a sustainable method of agriculture we are laying the foundation for sustainability in every aspect of our culture."

Excerpted from "Sustainable Food Production: Organic Agriculture" by Wayne Still. The New Catalyst, Fall 1988, p.10.

PLANNING FOR SUSTAINABLE DEVELOPMENT
A Symposium sponsored by
University of British Columbia
November 26, 1988

ACHIEVING SUSTAINABLE FOREST USE

By Herb Hammond, R.P.F.

Where do we start/Who will do it?

1. We must change our ways of thinking about and relating to forests. We are part of the interconnected web of a forest. Forests sustain us, we do not sustain forests.

   -forests do not focus on the production of any one or two items, but focus on sustaining the whole

   -a new priority of thinking:
   First: appreciate, give thanks for forests
   Second: protection and wise use
   Third: trade, barter -- economics

2. Abolish the existing tenure system which concentrates control of forest use in the hands of the forest industry, **the largest special interest group**. Approximately 96% of the productive forest land base is controlled by the timber industry. This industry operates under an ethic of technological manipulation and short term profit which is not sustainable.

   Return the planning and management control of public forests to the people through local forest use boards. These community-based groups would function under a Forest Practices Act which provides for forest land use planning for private and public forests and sets philosophies, principles, and standards by which various forest uses will be guided and conducted.

What is it/How do we do it?

1. The elements of sustainable forestry may be likened to a three-legged milk stool which does not stand (i.e. sustain) without all three legs being sound. The legs are:

   -soil/nutrients, water, biological processes
   -genetic diversity
   -ecological diversity (from D. Perry, 1988, Oregon State Univ.) If we consider the atmosphere to be the seat of the stool, we have a **whole system** which must be understood and protected. Based on these principles, current forest practices are not sustainable.

2. Sustaining forests means soft approaches that mimic nature. We do not understand how forests work and should not arrogantly presume that our view of a forest is sustainable. For example, large clearcuts, slash burning, planting, monocultures, and pesticide applications do not mimic nature.

3, Comprehensive, field based ecosystem inventories must form the basis of plans and activities. We cannot afford to not know "what is in the cupboard" or support the myth of decadent forests. Part of the reason for excessive cutting rates is that we do not have good information about our forests.

When do we start?

When the grass roots and mainstream of society realize:

-that economies and societies are based on ecosystems. If we degrade or destroy ecosystems we ultimately degrade or destroy our economies and societies.

-that large industry and big government control of forests is only good for a handful of wealthy power brokers and is not good for people (bureaucrats, loggers, environmentalists, merchants, etc.) or forests.

FORESTRY WORKSHOP

INTRODUCTION

The discussion by forest managers of the concept of sustainability is encouraging. The idea goes back to the 1800's in protestant reformation Germany. In its most general form, **sustained yield is a cultural idea**, emerging from our Judeo-Christian values; the idea of stewardship of the earth, taking no more than our fair share, and giving enough back to perpetuate the forest (e.g. reforestation). In practical terms the objective of classical sustained yield is to create **"the fully regulated forest"**, a forest with an equal distribution of age classes, and a theoretical balancing between cutting and growth.

CLASSICAL SUSTAINED YIELD ASSUMPTIONS

In Europe, the forests were overcut during the industrial revolution. Sustained yield was first implemented in a society with distinct social classes, and a relatively predictable economy. The fully regulated forest made sense. The assumptions were: **resource scarcity, social stability, and planning certainty**.

These assumptions were transferred to this continent and remain today at the centre of North American forest management. Needless to say, most of the classical assumptions do not apply, and the creation of **"fully regulated forests"**, the equal distribution of age classes in a "normal forest' in forest terminology, remains as elusive today as it was with passage of the Forest Acts in B.C. in 1912, 1946 and 1978.

WHAT IS NEEDED

The need to make wise decisions about our forests may well be greater today than ever before; especially with the emergence of global issues like the "greenhouse effect". **What is not needed** is a re-affirmation of a commitment to the classical assumptions of sustained yield. **What is needed** is a critical re-examination of our relationship with the forests, and each other. It may well be that **capital scarcity, social and economic change, and planning unpredictability** are more realistic assumptions for our situation.

A critical need is to broaden our vision of a forest beyond that of a fibre farm, to a fully functioning ecosystem. Whatever social and economic realities emerge, the biological realities will remain the same. We could face great changes in the future, if the predicted Centigrade increase in average temperature occurs, by the year 2050. Only a wholistic model of the forest will enable managers to comprehend the processes that make the forest work.

SUSTAINABLE DEVELOPMENT

Development should be ecologically sustainable, meaning that resources should not be used up faster than can be regenerated by nature. If this is accepted as a fist principle, **then conservation of the source of forest health and wealth; the soil, the forests' genetic diversity and the forests' ecological diversity** would be a prerequisite to every forest plan. It is therefore far more crucial to get a consensus on what kind of forest we want than to debate the means for achieving it. As Alice in Wonderland said, "**If you don't know where you are going, then any path will take you there**".

THE FUTURE FOREST

One thing is certain, the future will be different than the present. I agree with those who advocate; first, a sustainable forest within the limits set by the forest; then we can have a sustainable environment for people including a sustainable forest industry. **A development strategy within a conservation strategy will keep the options open as we cope with the many uncertainties we face**. This is very different to assuming a balance can be achieved by regulating only the cutting rate. This will mean a critical re-examination of the classical assumptions about planning and making decisions about forests, and could usher in a new era for maintaining and creating the future forest.

Ray Travers, R.P.F.

January 12, 1989

FORESTRY WORKSHOP

Suggested items for discussion in the Forestry Workshop:

1. Exploitation of B.C.'s forests is currently being conducted on a non-sustainable basis. There is entrenched overcutting.

2. There is an almost complete failure by the "Forestry Establishment" in B.C. to understand the multiple roles fulfilled by forests.

3. The basic resource, the soil, is being lost on a vast scale in B.C. due to improper forest practices. This is continuously reducing the forests' sustainable level of productivity for wood, water (quality and quantity), fish and wildlife, wilderness experiences and aesthetic opportunities. The forests' role in the gaseous balance of the atmosphere is also being damaged.

4. The methods of calculating the allowable cuts in much of the Province of B.C. contain huge inaccuracies which are inflating the cut. This is resulting in accelerated pressure to cut the remaining old growth.

5. The power of the Council of Forest Industries and its member companies is now at a level where the interests of the communities dependent on the forests of B.C. for their livlihood are being incompletely met. The interests being met (first priority) are those of the shareholders of the forest companies, not the true shareholders who are the citizens of B.C., since 90% of the forest land base is Crown land. The move to double the T.F.L. hectarage to 65% of the productive land base is the latest step in the multi-nationals' plan, in co-operation with the Government to monopolize the forests of B.C.

Mark Wareing, R.P.F.
Staff Forester
Western Canada Wilderness Committee

November 5, 1988

FVOA Statement on Fisheries

The resource comes FIRST. We must have the common sense of providing as best as we can for the future well being of the resource. Protection, regulation and enhancement must be used to serve the interests of the resource and not those who make use of the resource. No resource should be exploited to the extent that its proper management and control is jeopardized. It is fairly well acknowledged that a salmonoid enhancement program is not the most cost-effective approach to sustainable salmon fisheries. The maintenance of fish habitat and water quality are of paramount importance. The FVOA is not opposed to aquaculture operations "per se" but we are concerned in areas where such operations interact in some negative way and interfere with existing and long established commercial fisheries, anchorages and tie-up spots for the fishing fleet. Interaction may also be in the form of interfering with movements of wild stocks and stock holding, rearing and spawning areas. However, we also do believe that in some situations aquaculture operations can and do co-exist with other marine resource users.

In our view the most important concern we have is the fact that most British Columbians are not fully aware of the extent and seriousness of Native Indian land claims. If one examines in detail all Indian land and sea claims the conclusion is that more than one hundred percent of B.C. is being claimed. This is the result of overlapping and counter claims by the many Indian Bands in B.C. The Supreme Court of Canada is scheduled very shortly to hear an appeal on the case of a Native Indian charged with fishing with an illegal (oversized) net. If the appeal is successful it will mean that ALL Native Indian people in B.C. will be entitled to unlimited fishery for any purpose, subject only to conservation requirements. In other words, the Indians are claiming that they have the right to fish for any purposes and without any restrictions other than for conservation. Even licences would not be required. While only two percent of the population in B.C. is Indian, they already represent about 35% of B.C.'s commercial fishing industry. Now if each Indian band is given the power to set its own rules for its fishery, the result would be chaotic. The reality is that a number of bands will end up competing among themselves without any regard for conservation or for the needs of other Indian bands. One must remember also that the effect of such a court judgement will not be limited to fish but to all wildlife resources used by Indian people.

There is also the significant difference in quality between sea-caught salmon and those which are caught when they are about ready to spawn. Any up-river fishery will not produce high quality fish of the standard demanded by Canadians and international markets. Because salmon occurs and is harvestable in many locations and stages of life it must be managed by one central management authority.

We say the fish is a resource owned by the people of Canada, regardless of race, creed or religion, and should be managed and protected on behalf of all Canadians by the Department of Fisheries & Oceans. Granting special rights to any one resource user is discrimination and it will harm not only the Canadian fishing industry, an important natural resource in B.C., and Canadian fishermen who happen to be born non-Indian but also many Native Indians who are already well established commercial fishermen. In Washington State in the United States, as a result of the Judge Boldt court decision which took away half of the fisheries from non-Indian Americans, the once vigourous commercial and sports fisheries are but a shell of the past. The last cannery in Washington State closed in 1985. A large number of non-Indian Washington State fishermen were able to move their boats to Alaska. In B.C. Canadian fishermen will have no where else to go.

In view of the above we strongly question the logic and wisdom of the politicians in power in their attempts to settle Native Indian land and sea claims with the marine resource.

October 20, 1988 Fisheries Vessels Owners' Association

(invited but did not attend symposium)

Fisheries

In order for British Columbia to have a stable sustainable fishery there has to be a complete change in; i) the thought process applied to the fishery, ii) expectations from the fishery, iii) public accountability for the management of the fishery. What we need is a minimal 20-year plan fully understood by the public. What we have is, at best, a plan few people understand and a life expectancy controlled by the survival of the Minister of Fisheries of the day.

Georgia Strait chinook stocks have received all the publicity in the past year but there are many other stocks in decline as you are fully aware. Other chinook, coho are suffering from habitat destruction and over fishing; bottom fish are in decline in many areas, from what appears to be over fishing, but many people ask questions regarding the place of west coast herring stocks in the food chain and the effect of the herring roe fishery, these questions do not seem to receive adequate answers from biologists and managers. There are many areas where our knowledge is lacking and research is limited.

Perhaps the most pressing question within the fishing industry is that of the settlement of aboriginal claims. Certainly settlement of these claims should be the first priority in any attempt to put a sustained development plan in place.

There is little doubt in my mind that some system of territorial property rights is going to be necessary in the long term to adequately control over exploitation. But before we can deal with some of the specifics we have to deal with the major issues. To deal with habitat quality in all its aspects we need a government department structure which has power in the agricultural, forestry, fisheries and land use planning areas. In other words we need an effective method of integrated renewable resource management on a global,continental, national, provincial, regional and local level.

To achieve some results we need to inform the general public in order that pressure be brought to bear on politicians and managers to make the effort to search for a better way.

Henry L. Frew,
34785 McMillan Court,
Abbotsford, V2S 5W4

FISHERIES AND WATER WORKSHOP

Thoughts on sustainable development

(i) Application of the idea must vary radically from developed industrialized nations to the poorer, underdeveloped world. In the developed world, sustainable development must be the preferred alternative to economic growth much of which is pushing unsustainable levels of consumption (certain sectors of the economy can and will 'grow' under sustained economic activity, but not all). In the Third World development may result in economic growth, but should be justified not with end of growth in mind but rather the provision of needs.

(ii) Sustainability is or should be much more than objective figures in an economic ledger. It is about fostering empathy between human beings and their ecological (resource) context. It is about attitudes and philosophy. To this end, decentralization of decision-making and centres of power is imperative, because the best decision can only be made by people who have experiential knowledge (as well as, and in distinction from, factual/objective knowledge) of the ecological context. In experiential knowledge is the only hope for a durable ethic of stewardship.

(iii) Development is about power and money, and it is plainly clear that most 'errors' that have been made have been made in the name of abstract notions of growth, economic theory, resource exploitation and material standard of living. These continue to be the currency of rationale in government and business ... locations of power which are too frequently insensitive to the local ecological context. The notion of sustainable development is in great danger of being co-opted by economic status-quo interests, with little change in their activities. Decentralization of economic organizations and institutions is a necessary step.

Don Reid
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SCHOOL OF COMMUNITY & REGIONAL PLANNING

Alan F. J. Artibise, Director

UBC's School of Community and Regional Planning is Canada's first and still premier planning school. Our school has a 35 year history of graduate education and research in community, regional, and natural resources planning.

We emphasize an integrated approach to planning, incorporating social, economic, institutional, biological and physical design considerations. Our Master's and Ph.D. degrees are recognized by the Canadian Institute of Planners and the American Planning Association Accreditation Board. Five hundred graduates from our school have a wide range of exciting careers in community, regional, and natural resources planning, in diverse organizations from United Nations agencies to remote Indian Bands, in private sector firms, and at all levels of government.

Our program is deeply concerned with the challenge of sustainable development and how it can be achieved at regional and local levels. Our approach to this and other challenges incorporates strategic throught and action that identifies currently feasible options in the context of longer-term consequences.

We prepare our students for a variety of professional roles in research and problem analysis, leadership in participative planning processes, plan preparation and evaluation, impact assessment, and project management.

The Masters Degree is awarded to students who complete a two-year program of integrated course work and a thesis. Each Masters student designs an individual program, but all follow a core of planning studies comprising foundation, methods, and workshop courses. These emphasize the integrative aspects of planning and its common theory.

Our Ph.D. program is largely a research degree in any of the fields of expertise offered by faculty. Each Ph.D. program is uniquely tailored to the student's previous academic preparation, professional experience, and field of research.

UBC's Centre for Human Settlements (CHS) is the School of Planning's research institute. During the past 12 years CHS has pursued research in the broad field of human settlements. Most of our faculty are CHS research associates and the Centre provides many research assistant opportunities to our students. J. D. Hulchanski, who teaches housing in the planning program, is CHS's Director.

Westwater Research Centre conducts research on policies and methods of managing water and related natural resources. Two Planning School faculty, Anthony Dorcey and Julia Gardner, are affiliated with Westwater. Professor Dorcey is its Director.

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CENTRE FOR HUMAN SETTLEMENTS

J. David Hulchanski, Director

The UBC Centre for Human Settlements (CHS) was established following the 1976 United Nations Conference on Human Settlements held in Vancouver. The interest generated by the "Habitat Conference" led to the formation of a multi-disciplinary research centre within UBC's Faculty of Graduate Studies.

During the past 12 years CHS has pursued research in the broad field of human settlements, welcoming more than 70 visiting scholars, convening 40 research seminars, organizing 28 Habitat Lectures, and publishing 8 books and more than 50 research papers.

Since 1986 CHS has studied the nature and scale of homelessness in Canada within the framework of the International Year of Shelter for the Homeless. The Centre's research staff prepared the reports on homelessness which were submitted by the Canadian delegation to the United Nations Commission on Human Settlements in Nairobi.

In 1988 Dr. J. David Hulchanski, Associate Professor in the School of Community and Regional Planning, was appointed Director following a University review of the Centre's mandate.

The Centre is part of UBC's School of Community and Regional Planning. It reports to the School's Director, Dr. Alan F.J. Artibise, and to an inter-disciplinary governing council.

The aim of the Centre for Human Settlements is to undertake multi-disciplinary research and disseminate information on issues relating to housing, urban and regional development, urban governance, and community development planning. The Centre seeks to engage in policy relevant research which will help communities develop socially, economically and physically.

CHS research is aimed at identifying, studying and promoting processes by which communities can effectively shape and continually improve their own initiatives. The focus is on developing community-level interaction, identity, institutions and initiatives. The role of senior governments is addressed in terms of identifying what government can do to assist communities in their own development. The Centre also seeks to identify lessons which can be shared within and between industrialized and non-industrialized areas of the world.

Research is focused on the following geographic areas: Canada, with a particular emphasis on British Columbia and northern Canada (northern B.C., Yukon and the Northwest Territories); and Australia, Japan and other Pacific Rim countries. CHS also responds to requests for research work in other areas of the world where CHS staff and UBC faculty have expertise.

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